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ABSTRACT

The "Walk the Talk" classroom model was developed at Temple Junior College, in Texas, to help teachers include the principles of total quality management (TQM) in the classroom. This report presents results from a pilot project in which 29 teachers implemented the model. Following a brief summary, key elements of the model and the pilot project are reviewed, indicating that the model is based on four cornerstones of TQM: customer satisfaction, continuous improvement, empowerment, and teamwork. Next, the objectives of the model are described and a summary is provided of results from 21 pilot teachers who responded to a follow-up survey, focusing on the level of implementation and factors related to success and indicating that 86% thought the project was at least somewhat successful. The next section summarizes outcomes for 22 of the teachers regarding which aspects of the classroom model were used, indicating that 100% of the teachers initiated teamwork in their classes, but only 52% initiated continuous improvement. Survey responses from 739 students are then reviewed, suggesting that the majority enjoyed the use of TQM in their classes. Formal report summaries from 21 pilot teachers are then provided, including information on program expectations, implementation, results, and recommendations. Finally, 26 implementation ideas used by pilot teachers are described. The survey instruments and data tables are included. Order forms for pilot teacher reports and reports related to "Walk the Talk" are appended. (TGI)

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T O T A L Q U A L I T Y M A N A G E M E N T

TQM

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"Walk the Talk" Classroom Model Pilot Program

May 20, 1994

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THE TQM "WALK THE TALK" CLASSROOM PILOT PROGRAM

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PROJECT SUMMARY

Total Quality Management (TQM) can be defined by four cornerstones. These four cornerstones are: 1) customer satisfaction, 2) continuous improvement, 3) empowerment, and 4) teamwork.

Students entering the workplace in Texas will need to be able to understand and apply these principles. The Tech Prep initiative in Texas has identified the need for students to develop these skills. A TQM "Walk the Talk" classroom model was developed for teachers. This model consists of the following key elements:

1) Jointly develop a class vision
2) Jointly determine and live under a set of class "values"
3) Identify customers of the class
4) Work as participating members of teams.
5) Define and measure class quality.
6) Obtain and use problem solving skills.
7) Stress continuous improvement of a key measurement of class quality.

This model was introduced by over twenty pilot teachers to their classes this past year. The results of these pilot efforts were obtained through the use of student and teacher surveys as well as reports from the teachers.

The key benefits identified by the 739 students who responded to the survey were:

1) Learning to work in teams
2) Responsibility
3) Concepts will help in "real life"
4) More empowerment
5) Continuous improvement

Several typical comments from the student surveys were:

"In this class, we talk about many things that can help us in our lives; and in my other classes, I just do the work that the teacher gives us."

"The students had a larger say in what happened in class. The students worked together more. The students had more responsibility."

"We have gotten more done because we all work together."

"Not to be satisfied with the things the way they are; there is always room for improvement."

The twenty-two teachers who responded to the survey noted many benefits from the use of the "Walk the Talk" model in their classes. These benefits included:

1) It transfers responsibility for learning to the students
2) Students' grades improved
3) Classroom discipline improved
4) The student/teacher relationship improved
5) Student enthusiasm increased
6) Stress on the teacher was reduced

Several comments from the teachers were:

"TQM has a powerful impact! Attitudes improve!"

"Interest in the class increased."

"Better classroom management, students gaining decision making skills based on quality."

"It was a method to control students with potential discipline problems. These types of students need training for the real world of work, not the streets."

The students were asked if they like using TQM in class and if they felt they learned more as a result. The vast majority said they liked TQM a lot. Forty-three percent of the students felt that they had learned more subject matter using TQM in class than they would have without TQM.

The teachers also noted significant improvements in learning. This can be attributed to the fact that the "Walk the Talk" classroom model fosters student ownership of the class and; therefore, of the learning that occurs.

The TQM pilot project has clearly demonstrated the benefits of using TQM concepts, through the "Walk the Talk" model, in the classroom. The results have proven to be a real "Win-Win" situation. Not only do the teachers see benefits in better discipline and improved grades, the students see the benefit of an increased voice in decisions and more fun through teamwork.

The recommendations of four of the pilot teachers provide a fitting summary of the TQM "Walk the Talk" classroom model:

"I would highly recommend integrating TQM principles in any classroom situation."

"Do it! This has been one of my most enjoyable, challenging, and productive years."

"I will always use these principles in my classroom because they not only enable real learning to occur, but because they instill life values which will transfer to students' personal and professional lives."

"TRY IT, YOU'LL LIKE IT!'

TQM "WALK THE TALK" CLASSROOM PILOT PROGRAM

I. PREVIEW:

This report is designed to give the reader a general overview of the TQM/Tech Prep Curriculum Development Project as well as an opportunity to understand the "Walk the Talk" classroom model which provides a methodology by which teachers can effectively teach Total Quality Management in the classroom, while at the same time improving the effectiveness of the class.

This will be accomplished by providing background on the TQM Curriculum Development Project, explaining the "Walk the Talk" classroom model, providing some information about the TQM pilot projects and summarizing the results of the pilot projects.

The summary of the pilot projects will be in four parts with the first part being the results of the teachers survey. The second part will be the results of the teacher questionnaire which gave the teachers an opportunity to describe how much of the "Walk the Talk" model they used in their classrooms. The third section will consist of students surveys which were given to each student in the pilot projects. The fourth section consists of a summary of all of the pilot teacher reports as well as many of the classroom implementation ideas these teachers used to implement TQM in their classrooms.

II. BACKGROUND:

The principles of TQM can best be described by understanding what are called the four cornerstones of TQM.

1. The first cornerstone is a commitment to customer satisfaction. Every organization, whether they are a business or a school, has customers. Understanding what the customer wants and needs and meeting these needs, is the essence of quality.

2. The second cornerstone of TQM is a commitment to continuous improvement. Once the needs of the customer are identified, it is important that an organization make continuous improvement to meet these needs. Since a customer's needs continually change, it is important to maintain an attitude of continual improvement until these changing customer's needs are met.

3. The third cornerstone of TQM is empowerment. Empowerment is providing people with the authority and responsibility to perform their jobs as they believe they should be performed. Along with this authority and responsibility goes an accountability for the results.

4. The fourth cornerstone of TQM is teamwork. Teamwork comes about when people are empowered to perform their jobs. Empowered people will usually want to work in teams in order to be more effective.

In 1992, the Tech/Prep organization in Texas determined that teaching Total Quality Management (TQM) skills to students was a key factor in preparing them for the workplace of the future. The TQM skills cover many of the competencies and skills mentioned in the SCANS reports published by the Department of Labor. To accomplish this purpose, a grant was funded in 1992 titled TQM/Tech Prep Curriculum Development.

In 1992-93, the TQM/Tech Prep Curriculum Development Project had as an objective to develop curriculum material that could be used at either the secondary or post-secondary levels. A TQM course was developed which could be taught at either the secondary or post-secondary level, a set of eight modules were developed which addressed the major initiatives within TQM from a TQM overview and teamwork, all the way to a focus on processes and statistic process control. In addition, a model was developed, called the "Walk the Talk classroom model," which could be used by teachers to teach the concepts of TQM within their classes. This model was designed to provide a methodology for conducting a class which would not only teach TQM, but would also provide an effective teaching methodology. In addition to these deliverables, a teacher workshop was designed and presented to ten groups of teachers in order to train them in Total Quality Management and also in the "Walk the Talk" classroom model.

II. PILOT PROJECTS:

The focus of the 1993-94 grant period has been to identify and support a set of pilot programs which would demonstrate the effectiveness of TQM in the classroom. Twenty-nine teachers volunteered to participate in this program. Each of these teachers had an involvement in Total Quality Management in the 1992-93 time period either through attendance in a TQM workshop or a direct involvement in the initial pilot program. These pilot programs were supported through a quarterly newsletter, phone calls and visits to several locations where pilot teachers could join together and share ideas.

The objective of these pilot programs was for teachers to implement TQM in their classrooms, hopefully by implementing the "Walk the Talk" classroom model.

One of the objectives of the 1993-94 grant period was to develop a summary report which would summarize the results of all of the pilot projects. Twenty-two of the pilot teachers provided information with twenty-one preparing a final report.

INFORMATION ON THE PILOT TEACHERS

Subject Matter	Numbers
Microcomputer Applications	4
Marketing Education	4
Language Arts	3
Multi-Occupation Cooperative Education	2
Management	2
Industrial Tech	2
Mechanical Engineering	1
Home Economics	1
Special Education	1

Student Level	Number
High School	17
Community College	2
Middle School	1
University	1

III. THE "WALK THE TALK" CLASSROOM MODEL:

The "Walk the Talk" classroom model was originally designed to be a step-by-step process that a teacher could use to implement Total Quality Management in the classroom. The original intent was that, by following this model, the teacher would be able to introduce and explain the four cornerstones of TQM to their classes. It was designed to be used by any class from the elementary through the university level. A copy of the summary of the "Walk the Talk" model as well as a more detailed description of the model are found in section C.

The "Walk the Talk" classroom model begins with the teacher and the class jointly developing a class vision and a set of class values. The teacher should act as a facilitator and guide in this process and not a dictator. The establishment of the vision and class values should be done at the very beginning of the school year or the semester. The next key point of the "Walk the Talk" classroom model is to have the students work as members of teams. These teams can vary in size depending on the age level of the student. For a lower elementary student, two people working together form a team, but by the time a student exits high school, they should be able to work in teams of from four to six.

One of the items for a team to address is identifying customers of the class and measuring customer satisfaction. There are many approaches to the concept of customers. Some of the classes have considered the students themselves as the customers, or the teachers,

parents, or perhaps the employers in the area. The key factor is that the students understand that the output of their class does have a customer. It also is important to measure the level of satisfaction of that customer to see if the class is providing real customer satisfaction.

Another item that a class should address is determining a key measurement of class quality. This could vary from discipline, attendance, or tardiness, all the way to turning homework in on time, completing assignments, or making certain grades at different check points, such as six-weeks. Once this measure of class quality has been determined, it is important that the class work together to measure this and to make improvements in order to meet this measurement of quality.

One of the benefits of the "Walk the Talk" classroom model is that it can be implemented in many different ways. Of the twenty-two pilot teachers who reported on their implementation this year, each had a different approach to accomplishing the task. As long as the four cornerstones are covered and the students understand them, the teacher has actually used Total Quality Management in the class. Most teachers found that the implementation of this model is a continual process. Several teachers started with parts of the model, used them and became familiar with them, then introduced additional aspects of the model as they felt the students were ready.

IV. TEACHER SURVEY

Twenty-one teachers sent in an anonymous survey. This survey was designed to determine if the teacher used Total Quality Management and if they had felt it was successful. They were given an opportunity to point out why the pilot project might have been successful or unsuccessful.

Each of the teachers, that responded to the survey, said that they implemented the "Walk the Talk" classroom model in their class this year. Seventy-six percent of those who responded felt that the pilot project was successful. An additional ten percent felt it was somewhat successful, with only fourteen percent feeling that it was not successful. The three teachers who felt that it was not successful were more frustrated with their inability to get much of it accomplished than they were with the results that were achieved. Reading the comments of these three shows that they all had successes in implementing it, they just had not implemented it to the level that they wanted. The results of the teacher surveys are described in Section D.

The major benefit that the teachers observed regarding the "Walk the Talk" classroom model was the level of student ownership and accountability in the classroom. They also attributed teamwork and the attitude of the teacher to the student as other factors for the

success of this model. Many of the comments of these individual teachers concerning their successes or their frustrations are shown in Section D.

V. TEACHER QUESTIONNAIRE:

A questionnaire was sent to each of the pilot teachers for their response as to which aspects of the "Walk the Talk" classroom model they implemented. They also commented on any of these that they desired. A total of twenty-two teachers responded to this questionnaire.

The seven different aspects along with the percentage of the teachers who implemented each are listed below and shown in a graphical format on page E-9.

Aspects of Model		% Implemented Yes	Somewhat	No
1.	Class Vision	61.9%	4.8%	33.3%
2.	Class "Values"	85.7	4.8	9.5
3.	Customer Satisfaction	66.7	19.0	14.3
4.	Teams	100.0	0.0	0.0
5.	Problem Solving	85.7	14.3	0.0
6.	Class Quality	71.4	9.5	19.1
7.	Continuous Improvement	52.4	14.3	33.3

All teachers implemented teamwork in their classes. The teacher comments as well as student comments relate the many successes achieved through teamwork. The high level of implementation of class "values" is also supported by the fact that both teachers and students felt there was more empowerment as well as better behavior in their classes.

Problem solving was implemented in several different ways in the classrooms. Some teachers used problem solving as a method to resolve problems with behavior. Others used it as a means to address various class problems. Still others used it to solve problems that they identified for the specific purpose of teaching problem solving. The students had few comments regarding problem solving.

The areas of class vision and continuous improvement had the least level of implementation. This was primarily due to the fact that some teachers did not feel as comfortable implementing these concepts as they did the others.

Most teachers commented that next year they are planning to implement the portions of the "Walk the Talk" model that they didn't implement this year.

The results of the TQM Pilot Questionnaire along with teacher comments are shown in Section E.

VI. STUDENT SURVEYS:

Each of the pilot teachers was provided with a survey to administer to their students. A total of 739 surveys were submitted, representing twenty-two pilot teachers. The students were given the opportunity to describe how much they had learned on each of the four cornerstones of TQM, how this class was different from other classes they had taken, respond to the question describing how much they liked using TQM in class, determine if they felt that they had learned more in this class because of using TQM and finally to describe the most important thing they had learned in this class.

The students had an opportunity to write the amount of information they felt that they had learned about the four cornerstones of TQM on a scale from 1 to 10, with 1 being "not very much" and 10 being "a lot". Teamwork rated the highest by a good margin, with an 8.0 average rating. Continuous improvement and customer satisfaction rated 7.4 and 7.3 respectively. Empowerment rated the lowest with a 7.2. I believe this low rating for empowerment is not a fair rating. I believe each of the classes had a high level of empowerment exhibited on the part of the teacher. Perhaps the teacher did not use the word "empowerment" and explain each time the students were being empowered.

Teamwork was the most widely mentioned difference between this class and other classes taken in the past. The second most commonly mentioned item was they were being taught things that would help them in the "real world". Other items that the students saw different in this class were that they were given more responsibility and had more empowerment.

The students were also given a opportunity to rate how much they liked using TQM in the classroom on a scale from 1 to 10. The average response from all the students was 7.2. The vast majority of the students rated TQM from average to above average. A small number of students seemed to dislike TQM. Reading the comments of these students, there seems to be one thing in common. These students appear to have trouble working in teams or don't like working with other people.

The most surprising result seen in the student surveys was how the students responded to the question, "Do you think you have learned more subject matter in this course by using TQM?" Over forty-three percent, of the students who responded, felt that they had actually learned more subject matter by using TQM. Of course, this is a judgement on the part of the students, but I feel that since these students are from a variety of courses in all parts of Texas and a variety of age groups, this response is valid. Many of the pilot teachers saw the grades improve in almost every class, showing that learning did go up by using TQM in

class. I attribute this mainly to the fact that the students had ownership for the class and therefore they felt an ownership for learning and making better grades.

Only about six percent of the students felt that they had learned less by using TQM in the class. Twenty-six percent felt that they had learned the same amount by using TQM with another twenty-four percent not sure if they had learned more or not.

The final question the students were asked was what was the most important thing they had learned in class. Again, the most frequently mentioned comment was that they had learned to work in teams. The second most frequently mentioned item was the subject matter they learned. Other areas mentioned were continuous improvement, future job skills, responsibility, and customer satisfaction.

It was evident from the students' comments that they liked the use of TQM in the class, they liked the responsibility and the empowerment that they received, they liked working in teams, and most of all they seemed to have fun doing it.

More information regarding the student surveys can be found in Section F.

VII. FINAL PILOT REPORTS:

Section G gives a synopsis of each of the pilot teacher reports that were submitted. Complete copies of each of these reports can be obtained by mailing in the order form on page I-1 to the TQM Pilot Project office at Temple Junior College.

The synopsis includes an identification of the pilot project, a brief description of the implementation of this pilot project along with a summary of the results achieved.

VIII. CLASSROOM IMPLEMENTATION IDEAS:

Section H provides a list of twenty-six classroom implementation ideas that were used by the different pilot teachers during the year. Each of these implementation ideas is described in enough detail for the reader to be able to understand the concepts that were used. Additional implementation ideas will evolve through the creativity of the teachers implementing the "Walk the Talk" classroom model. I would also suggest giving students an opportunity to come up with ideas on ways to implement some of the cornerstones of TQM.

Each of the implementation ideas tends to be built around the concept of empowerment, making learning relevant, and letting the students have fun.

IX. BENEFITS:

Clearly the major benefit gained from using the "Walk the Talk" classroom model is the transfer of responsibility for learning to the students. This was a common thread throughout the comments from both the teachers and the students.

Another major benefit of this model is the fact that the behavior of the students improved. This was seen in the lack of discipline problems by several teachers and the overall comments that behavior improved. This improved behavior can be attributed to the fact that the classes established a set of values to live by, they took ownership for these values, and then the classes tended to enforce these values rather than relying on the teacher to provide the enforcement.

Another benefit obtained by the use of the "Walk the Talk" classroom model was improved grades. Almost every pilot teacher gave an indication of quantitative or qualitative student performance and grade improvement.

Another area that teachers cited as a benefit was an improved student-teacher relationship. The fact that the teachers give more responsibility to the students and took on the role of facilitator and coach versus an autocratic style of teaching clearly improved this relationship. The teachers also mentioned that using the model reduced their stress level. Student enthusiasm also increased by using the "Walk the Talk" model.

It is clear that there are many benefits to the use of the "Walk the Talk" classroom model in addition to the ones mentioned by the teachers. This model is compatible with other educational initiatives and can be used in any classroom. The model requires slight modification for use in the lower elementary levels. In the lower grades, it is not appropriate to spend much time on customer satisfaction. The terminology of "vision" and "values" would also have to be modified to be more age appropriate.

There were no major problems mentioned and each of the pilot projects listed multiple benefits.

X. RECOMMENDATIONS:

Pilot teachers made many recommendations as a result of their final reports. Several of the recommendations that had multiple mention are discussed below.

The teachers stressed the importance of making sure that a level of rapport and trust are developed with the students before empowering them. They mentioned many times that younger and more immature students have difficulty handling empowerment. Again, empowerment must be built on trust and time must be spent to develop this trust with

students. It may be necessary to only give small levels of empowerment to some students with some classes having a lot less empowerment than others.

The second recommendation that seemed to have a high level of support is the need for advanced teacher planning and preparation time on the different aspects of implementation. A recommendation that can be made here is to do some outside reading and familiarization with TQM other than totally relying on the "Walk the Talk" classroom model. Reading through the list of classroom implementation ideas the teachers have generated would also be another way of helping to prepare a teacher for using the "Walk the Talk" model. A third area that had several recommendations was the area of developing class quality measurements. Several of the teachers felt that it was very important to establish achievable standards for their students ahead of time and to stress achievement of these standards.

I strongly recommend that any teacher considering implementing the "Walk the Talk" classroom model take the two day workshop on Total Quality Management offered by the TQM/Tech Prep Curriculum Development Project. This workshop not only introduces the teachers to the concepts of TQM, but also gives them some practice in seeing the "Walk the Talk" classroom model demonstrated and also provides the opportunity to discuss its implementation with other teachers and be able to review some of the ideas that teachers have used.

XI. SUMMARY:

The pilot projects have been very successful this year. Clearly, some of the teachers implemented the "Walk the Talk" classroom model to a greater extent than did others. But none of the teachers described any failures as a result of this experience. The students clearly saw the benefit in the use of the model because they felt that they learned more about teamwork, responsibility and they seemed to have a lot more fun and enthusiasm as a result. The teachers, in turn, saw the benefits through improved grades, better discipline, and less stress on them. This is the first year of the use of this model, although many of the characteristics of this model have been used by teachers for many years. I believe it is the integration of the different aspects of the model that have made it so successful.

In keeping with the concept of continuous improvement, this model will be continually improved as teachers have additional opportunities to use it and make modifications. This model has undergone ongoing revision throughout the last year. Although the basic concepts have not changed, several subtleties have been added in order to make it a more meaningful example of the use of Total Quality Management in the classroom.

In the final reports, most pilot teachers strongly recommended the use of this "Walk the Talk" classroom model for all teachers. Clearly, these teachers believe in it and are sold on the concept. I think the fact that the benefits have been clearly seen by these teachers

cannot be disregarded. I can only add my recommendation that each teacher give this serious consideration, learn more about TQM, and implement this model to the fullest extent they possibly can.

XII. FUTURE ACTIVITIES:

The TQM/Tech Prep Curriculum Development Project is planning to continue the initial pilot projects another year and monitor the improvements the teachers make in the second year. The grant will also support a teacher training program where teachers will be trained to be facilitators of the two-day TQM teacher workshop. Another objective of the grant is to migrate the training of this model into the educational service centers and into the colleges of education.

"WALK THE TALK" CLASSROOM MODEL

SUMMARY:

- Jointly develop a class "vision"
- Determine and live under a set of class "values"
- Identify customers and measure their satisfaction
- Work as participating members of teams
- Define and measure class quality
- Focus on key measurements of class quality and stress continuous improvement
- Obtain and use problem solving and decision making skills

"WALK THE TALK" CLASSROOM MODEL

DURING THE FIRST FEW DAYS OF CLASS:

On the first day of class, the class discusses a class vision and jointly defines one with the aid of the teacher. (This can be facilitated by the teacher asking such questions as: Why are you in school? Why are you really in school? Why are you taking this class? -- The initial reaction of students may be to give trivial responses to these questions. Keep asking "why?" until the responses are serious. The intent is to make them truly understand why they are in school and taking this particular course. This "vision setting" may take more than one day.)

The class agrees with the teacher on the mission using brainstorming principles.

The class divides into teams. (The class determines how to establish the teams, with some groundrules established by the teacher; such as: as nearly an even split of the class in each team between: boys/girls, majority/minority, tall/short, blond/brunette, Texan by birth/non-Texan, etc. It would also be beneficial for the class to decide if a person can quit a team or not be on a team. Should there be penalties for those who can't work together on a team?)

Each team should have from 4-6 members.

Each team brainstorms the "values" that the class will live under during the semester/year. Once each team agrees, all values can be listed on the board and the list narrowed down to 6-8 values using consensus techniques such as nominal group technique or weighted voting.

The class should then determine how to address situations when the values are not being followed. (This can be facilitated by asking, "What do we do if a certain value isn't being followed?" This may lead to a lengthy discussion on enforcement methods.)

DURING THE FIRST WEEK OF CLASS:

The teacher takes these values and incorporates them with those of other classes (if appropriate) and publishes them for the class.

The class "brainstorms" the concept of customer, to determine who the customer(s) of this class is (are).

The class develops a way to measure customer satisfaction and takes a base reading of this satisfaction (if possible).

The class discusses the concept of benchmarking and determines a benchmark for their class.

The class should determine several measurements of quality for their progress. (examples: % class attendance, % mastering a competency, % of work completed on schedule). They should then take these measurements at selected intervals and keep track on a chart.

The class should define quality as a class and as individuals. They should determine acceptable levels of quality for work. (This could be such items as: oral reports will have a written summary, all members of the team must sign all group projects).

The class must understand something about teamwork. They need to agree that the team will use consensus, majority rule, 100% agreement or some other method to take actions.

ONGOING DURING SEMESTER/YEAR:

The students should come up with many of the "standards" of quality for each assignment or project. They can also identify "features" which would be attributes which exceed the "standards" established. These "features" could be a way of determining levels of quality above the "standard" set. These "features" could be so important that they could be incorporated into the "standards" for the next iteration, thus providing continuous improvement. (The teacher may need to add items to the "standards" if the students haven't identified certain critical items. This should only be done with the students' agreement.)

A portion of the student evaluation should come from self-assessments and peer assessments. These self-assessments and peer assessments should use the standards that the class has agreed upon.

A competency portfolio should be seriously considered as a way of assessing each student's progress/achievement in the class.

Periodic customer surveys should be taken using the student as the customer.

Assign as much work as possible to the teams versus individuals. When possible give projects that require several or all teams to work together to complete.

Teach problem solving techniques so that the teams can use these techniques in approaching their assignments. As many assignments as possible should be presented in the form of problems.

Team member roles need to change periodically, giving everyone a chance to lead, observe, etc.

The teams should also be realigned periodically. It is important that teams stay together long enough to learn the stages of team development. It is suggested that teams stay together at least six weeks.

The concept of processes must be discussed. The class needs the opportunity to identify and draw up a process during the class. (examples could be: how does a student get a high school diploma? How do you get ready to go to school in the morning?, the problem solving" process could be used to demonstrate a process)

The teacher should take on the role of facilitator as often as possible.

The teacher will need to keep reminding the class of the class vision, mission and goals. If there are problems, reminding the class of THEIR values should help resolve the problem.

Using the problem solving process to resolve class problems will demonstrate the benefit of the problem solving approach and also allow the students input into solving real problems.

TQM PILOT TEACHER SURVEY

A survey was sent to all twenty-nine pilot teachers in March of 1994. The intent of the survey was to determine how many of the teachers implemented the pilot project and if they felt their effort was successful. This was an anonymous survey and teachers were given a stamped self-addressed envelope to return the surveys. A total of 21 surveys were returned out of the 29 sent out. A copy of the survey is on page D-5.

I. LEVEL OF IMPLEMENTATION AND SUCCESS:

The first question on the survey asked the teacher, "Did you implement the TQM Walk the Talk classroom model in any of your classes this past year?" The second question asked the teachers how successful they considered their pilot project. On page D-6 is a graph which shows the level of implementation and the level of success as signified by the teachers. One hundred percent of those responding said that they implemented the TQM "Walk the Talk" model in at least one of their classes this year. Seventy-six percent of those who responded felt that their pilot project was successful this year. An additional 10% felt it was somewhat successful with 14% feeling that it was not successful.

The reasons given by the teachers who responded that their pilot project was successful varied. Comments mentioned most were: "improved student attitude", "empowerment", "customer satisfaction", "continuous improvement" and "problem solving". Of the three pilot teachers who felt that the model was not successful this year, two of them reported there was not enough time to implement the model properly and the third cited a lack of preparation on their part. After reading these comments, none of these teachers felt like the implementation was a total failure. They just felt that they had not done as good a job as they could have during the year. In fact, of the three who responded that they did not feel the pilot was successful, one of them said it was successful for the first semester, but they just ran out of time to implement it properly in the second semester. The other two felt that because of new circumstances in their school, or because of student attitudes the model wasn't as successful as it should be. They both commented that they believe in the "Walk the Talk" model and they are going to use it next year and do more advanced planning.

Several of the comments that the teachers gave for why their pilot projects were successful or unsuccessful are listed below:

"Students felt empowered as learners, worked cooperatively with others, continuously improved their product and felt that they had customers other than the teacher."

"TQM has a powerful impact! Attitudes improve!"

"Interest in the class increased."

"I enjoyed giving the students some power to make decisions. It took some of the responsibility off me for their actions and consequences."

"In that I started, I feel successful - I have a long way to go!"

"Better classroom management, students gaining decision making skills based on quality."

"It was a method to control students with potential discipline problems. These type of students need training for the real world of work, not the streets."

"It has been more fun, but also more challenging. You must be willing to give up some of your control (really a lot of it.)"

"I didn't prepare enough to begin early (first day) and follow through."

"I ran out of time during the second semester. TQM was great the first semester. I just 'dropped the ball' second semester!"

II. FACTORS OF SUCCESS:

Those who felt their pilots were successful had an opportunity to list several contributing factors. The factors they mentioned and the number of times they were mentioned are shown below:

Factors for success	Times mentioned
Student Input/Responsibility/Empowerment	9
Teamwork	6
Attitude of teacher to students	3
Continuous Improvement	3
Student attitudes	2
Student problem solving	2
Customer satisfaction	2
Higher grades	1
Improved work habits	1

The primary reason mentioned by the teachers was the level of student input and empowerment. These were grouped together because a lot of the comments overlapped in this area. It is fairly clear that student involvement was listed by the teachers as the highest factor for success. The second most often mentioned factor was the amount of teamwork. The teamwork theme runs throughout the student and teacher surveys as well

as the teacher questionnaire. It is clear that teamwork is one of the most important initiatives in the TQM "Walk the Talk" model. It is also quite interesting that the third highest was the fact that the teachers themselves had a more positive attitude toward the students. One of the teachers said, "There was less stress on me when I gave empowerment or responsibility to the students."

Some of the representative comments made by the teachers regarding the classes' successes are listed below:

"Students were receptive. They realized that since they devised the values & rules, they were worthy and willing to take the consequences for them. They had fun with the games."

"Student interest was heightened when I used any TQM technique."

"I prepared the students by explaining SCANS, teaching Cooperative Ed practices, and allowing them to teach themselves (they became the class.)

"One - the students bought into it. Two - TQM gave them a vision of training the product (them) for customer satisfaction (computer class)."

"Students are more aware of accountability and having to work together to be successful."

"One of the most successful items was that the students owned 'responsibility.' Students did more of the paper work and housekeeping duties that the teacher had previously done."

"My attitude toward teaching the students. I believe I was able to let go of the responsibility for learning and get the students to take on this job."

"A lot of work - a change in mind-set on my part."

III. RECOMMENDATIONS:

All the teachers had an opportunity to comment on what would have made the pilot project more successful this year. There were quite a few different items mentioned. These items tended to fall into three major categories. The three categories were: 1) a more regular and more consistent use of TQM in the classroom. 2) additional training and aids for use with TQM, and 3) more advanced planning and more time.

Some of the typical suggestions that the teachers made are listed below:

"Daily implementation of the four principles of TQM."

"Utilizing specific TQM terminology. I felt that student surveys would have been more meaningful if all students understood all TQM terms."

"I should have planned my year around TQM."

"Chart the performance visually for them to see. The projects were always improved and appeared better, however, they could not see statistics."

"More guidelines as how to implement from educators point of view."

"Having a video on TQM to help introduce the model to the class. Many TQM videos produced professionally are very expensive."

"More knowledge and especially, practice on my part."

"Preparation, planning to incorporate as part of every lesson or at least every week. But I believe in it and will do a better job with it next year."

"Time factor. I needed more time to fully use TQM. As the year went on, I used it less for projects and everything because I was in such a hurry to get everything done."

IV. SUMMARY:

In summary, the TQM Teacher Surveys were very positive. A couple of teachers were somewhat frustrated that they didn't accomplish all that they wanted to. Those who were frustrated did use TQM and had a level of success. They just were not pleased with the level of success they achieved. Since only 21 of the original 29 pilot teachers responded to the survey, it is difficult to determine if some of those who did not respond either did not implement the project this year or just didn't respond to the survey. A 72% return rate is fairly high. The responses to the Teacher Survey were very similar to the responses that were given in the Teacher Questionnaire. I believe they do give a slightly different insight. The Teacher Survey responses tend to point out the importance of the positive attitude changes of both the teacher and the student when using the model. The student surveys seem to also substantiate this because their comments tend to be very positive.

Based on the recommendations made by the teachers on this survey, several actions are being undertaken by the TQM/Tech Prep project office.

1. Additional training is being made available to all pilot teachers.
2. Several TQM videotapes are being prepared for use by the pilot teachers.
3. The TQM "Walk the Talk" model is being modified to incorporate additional guidelines.

TQM TEACHER SURVEY

(This is an anonymous survey. Please complete and return it in the stamped, self-addressed envelope provided. Thanks.)

1. Did you implement the TQM "Walk the Talk" classroom model in any of your classes this year?

   Yes No

2. Would you consider your TQM pilot effort this year as successful? (circle one)

   Yes No

   Why or why not? _____

   _____

   _____

If you answered "Yes" to questions 1 and 2 above, continue with question 3. If not, go to question 4.

3. List several factors that made the pilot project successful. _____

   _____

   _____

   _____

4. What would have made your pilot project more successful this year? _____

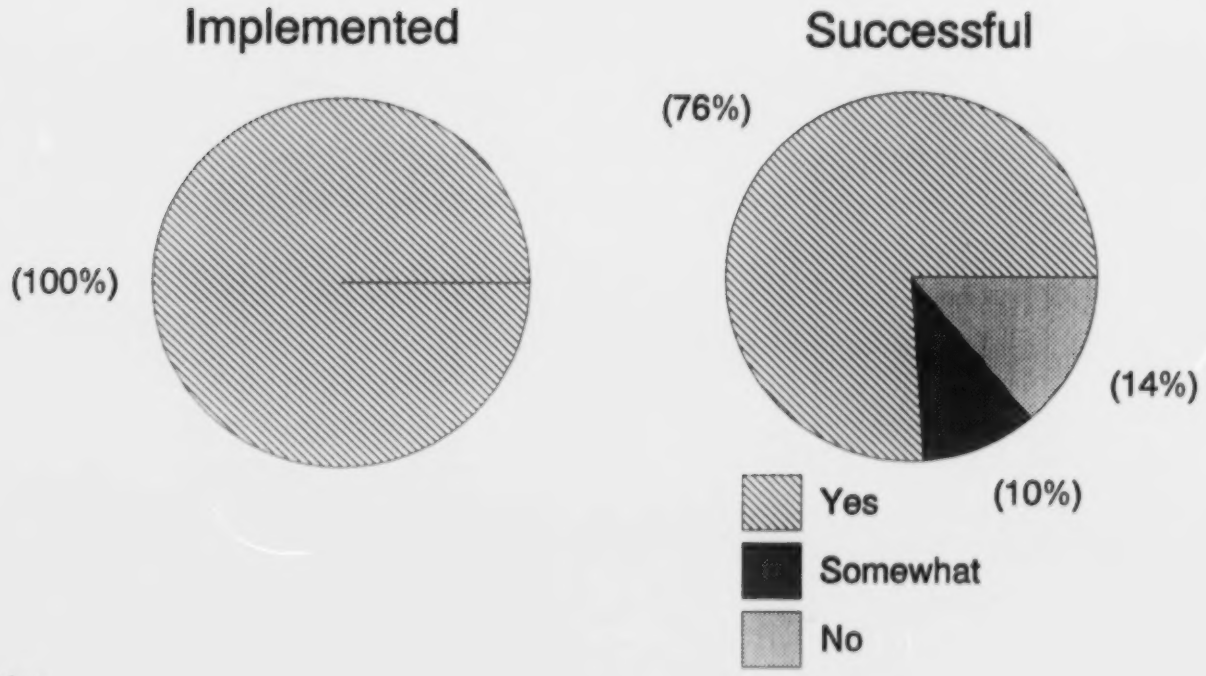
   _____

   _____

   _____

Success of Pilot

% of Response



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TQM PILOT (TEACHER) QUESTIONNAIRE

A questionnaire was sent to the pilot teachers in March (a copy of the questionnaire is on page E-8). Twenty-two responses were received. The purpose of this questionnaire was to determine which aspects of the "Walk the Talk" classroom model were used and to obtain the teacher's comments. Based on the teacher responses, 100% of the teachers initiated teamwork in their classes but only 52% of them completely initiated continuous improvement. The graphic representation of the results of this questionnaire are depicted on page E-9.

I. CLASS VISION:

Only 62% of the teachers felt that their classes had done a good job of establishing a class vision. This is an area where experience on the part of the teacher will make this process easier. It is important that the teacher has a clear vision of what they think the students should achieve from the class. They can use their vision in guiding the students as they establish a class vision together.

It is important that the established vision comes from the students, not a "parroting" of what the teacher says. The quality and relevancy of the class visions will improve as both the teacher and students gain experience in establishing them. It might be of value to review the class vision after a couple of months to make sure that it is still accurate. This might allow the students to make revisions.

Several of the teacher comments follow:

"Our vision was right on target. I was very pleased with my students' spoken desires."

"We focused on producing quality projects with 'zero defects.' That was the meaningful vision students decided to work for."

"Students were surprised when I gave them a say in the class."

"This area was not developed as well as it should have been. Class vision was not discussed much."

In order to gain student ownership for the process of learning, it is important that time is spent in order to allow the students to establish a class vision that is meaningful to them.

II. CLASS "VALUES":

Eighty-six percent of the teachers said that their classes established a set of class values. Based on the teacher comments, this area had a marked influence on the behavior of their classes. The fact that the students established a set of "shared values" seemed to provide two major benefits: 1) the students were more willing to improve their behavior and 2) this action went a long way toward transferring ownership for learning from the teacher to the students.

Several comments from the teachers were:

"What a change in the classroom environment."

"A new method of behavior for them."

One of the teacher comments provides a view of representative class values:

"After practicing consensus-building, the class decided upon three values: Respect, Cooperation, and Productivity."

Another teacher comment pointed out an area for improvement in the "Walk the Talk" model:

"Each team set 'values', then the five most common were selected for class 'values.' We set them and it was very helpful, but we could have lived under them better, and problem solved better in how to live under them."

It became evident that it would not be enough just to establish a set of class "values." It is key that the class determines a method to respond to situations when class behavior does not correspond to the class "values."

A common way this was addressed was to have someone (teacher or student) point out the value not being followed and use a problem solving approach to determine how to address the situation. Several situations, such as talking when others are talking, are in conflict with the "value" of respect. Several classes determine methods for handling these situations without having to "problem solve" each time. One class established two sergeant at arms and another had the team leader enforce the values within their team when necessary.

III. CUSTOMER IDENTIFICATION AND SATISFACTION MEASUREMENT:

Although 67% of the teachers implemented this initiative in their classes, very few felt that they had done it adequately. The common theme was that the class had determined their

customers but they had not spent enough time determining the level of satisfaction of these customers. This was supported by the results of the student surveys where the students felt that they had learned less about customer satisfaction than they had about teamwork or continuous improvement.

Several teacher comments were:

"They had a better perspective of what they needed to do to be more successful."

"Customer satisfaction was defined and evaluated on a number of levels, from self-satisfaction to community satisfaction through TQM projects/products and follow-up surveys/evaluations."

"The class determined their customers but this caused a rift in their preconceived ideas. Students did not measure customer satisfaction because we basically did not have time to find them and generate the survey."

"Identified but did not follow through with measurement."

This is another area which will improve as the teacher gains more experience with the "Walk the Talk" model. Several classes identified a customer which required a great amount of effort to survey. Although the teacher should not eliminate these situations, they may want to have the students identify an alternative customer which might be easier to measure.

Several classes went to great efforts to survey their customers. The activity of identifying and measuring customer satisfaction is one of the key components of understanding TQM.

IV. TEAMWORK:

Every teacher implemented teamwork within their classes. The teachers as well as the students considered this initiative to be the most beneficial initiative within the "Walk the Talk" model.

Some of the typical teacher comments were:

"Very productive."

"They became active TEAM members."

"They enjoyed this approach. Hated changing but got to know everyone in the class."

"This was the most successful part of our class."

"'Empowered' students became 'empowered' teams with on-going skill enhancements."

"Students worked very well as teams except some teams saw other teams' success and became discouraged."

"This was challenging. Lazy or non-participating team members will always be an issue. When pressed for time on a project, this is difficult to deal with."

"There are always a few who will not participate and hang on the coat tails of others."

The students rated teamwork as the area that they learned the most about in their classes. They also had the most positive comments on teamwork. This demonstrates the importance of teaching effective teamwork in the class.

V. PROBLEM SOLVING:

Eighty-six percent of the teachers signified that they used problem solving in their class with the other fourteen percent using it partially. Many different methods were used for problem solving. Some teachers used problem solving skills to resolve "value" problems, day to day problems in classes, and special problems designed to enhance problem solving skills.

Some of the comments the teachers made about problem solving were:

"They loved having a voice in the day-to-day running of the class."

"Higher level of thinking skills enacted."

"In some cases decision making skills and problem solving skills were very weak. I contributed that to maturity levels."

"Empowering students requires trust. Start slowly, then it does not appear that you are "forcing" students to take control."

"Sometimes they did very well, sometimes at a loss without input from me - They are now closer than they were before the project started."

"We learned the value of it and used it but we could have used it more."

As can be seen from the quotes above, the area of problem solving is one that wasn't always smoothly implemented. Some of the teachers were able to be very effective in the use of problem solving. A lot of the success depended on the maturity level of the students and their ability to comprehend and add value to the problem solving process. The area of

problem solving is one that needs to be continued and stressed throughout the school year. As one of the teachers stated, "Sometimes it has to start fairly slow depending on the maturity level of your students and evolve and build on their problem solving skills as they become more comfortable being empowered to make decisions and to actually resolve problems."

VI. DEFINED AND MEASURED CLASS QUALITY:

Although seventy-one percent of the teachers signified that their classes defined and measured class quality, the write-in comments show that this did not go smoothly in all cases. Even though the concept of quality might be new to many of the students, it appeared that the students were able to define areas such as grades or attendance that did affect the class quality. The problem appeared to be one where the classes did not follow through on measurements and make the improvements in quality that they could have.

Several of the comments on class quality were:

"Much improvement occurred here. Students have had ten years of teachers doing this. It takes time to change paradigms, but we saw improvement here."

"As well as they understood 'Real World Concepts' of judging class quality."

"Yes - watched a marked increase in quality over the semester."

"Defined yes, measured no."

"Sometimes this became quite cumbersome and time consuming."

"Not to the degree that I would have liked. An area to be stressed next year."

"We tried this somewhat, but they set their standards so low (to avoid work) that they were useless."

Several of the teachers mentioned the fact that as the year went on they were not able to focus on the class quality as much as they wanted to due to time constraints. This is an area that requires planning and again, like several of the other areas, it will improve as the teacher gains experience in using the "Walk the Talk" model. The key factor in determining, defining and measuring class quality is to actually take a measurement that is important to the improvement of the class such as attendance, turning homework in, or perhaps mastery of the content areas.

If the class quality measurement is truly key to the success of the class, it will be more natural to try to make improvements in it and to have the students involved in measuring it. Again, it's important that the students do the measuring versus the teacher having to spend their time doing this work.

The area of class quality is a key area in the "Walk the Talk" model and is what allows the concept of continuous improvement to be effectively applied.

VII. CONTINUOUS IMPROVEMENT:

The area of continuous improvement was the one initiative within the "Walk the Talk" model that was implemented the least. Only fifty-two percent of the teachers signified that they implemented continuous improvement with an additional fourteen percent saying that they did it to some degree. As was mentioned in the previous section on class quality, continuous improvement depends very much on the class defining a good measurement of class quality and then working to improve it. It would naturally follow that, if time were a factor and the class was unable to really focus on class quality then, their efforts to do continuous improvements on one of these key measurements of class quality would also suffer.

Teacher comments regarding continuous improvement included:

"Absolutely. 'Redos' by choice was very successful."

"Yes - But not on purpose at first. It happened by accident when we noticed one particular standard kept reappearing."

"Yes - checking work for quality before handing in."

"I need to work in CONTINUOUS improvement and give the responsibility back to the student."

"No - the pace of the course and the other innovations we brought in didn't allow time for this."

I believe one of the key quotes listed above was the last one which pointed out the fact that the pace of the course and the other innovations being used didn't allow adequate time to pursue continuous improvement. The entire "Walk the Talk" model does have a lot of initiatives involved in it and although they may not be difficult individually, to keep balancing the curriculum that must be taught along with the different TQM initiatives can be difficult.

With adequate advanced planning, I believe the teacher can combine customer satisfaction along with the class quality and continuous improvement into a general thread of understanding the customer's requirements and needs and tying those in to a quality measurement and then measuring this quality and making continuous improvements through time. Again, by using problem solving in the process of continuous improvement, this could provide benefits for the other initiatives also.

VIII. SUMMARY COMMENTS:

The general theme that went through all the teachers comments were that they felt that the "Walk the Talk" class model was positive for their class and the use of TQM in the class had very positive effects. There was concern about the amount of material to be covered along with their experience level with total quality management. It is evident that the concept of continuous improvement applies to the implementation of the "Walk the Talk" class model also. Many teachers pointed out the fact that they made progress but were somewhat disappointed that they had not achieved all that they wanted to achieve. Many of these teachers signified that they know what they want to do next year and will continue to improve and stress some of the initiatives that they did not stress this year. The area of teamwork, problem solving and establishing class values were clearly the areas that were implemented most by the teachers in their classrooms. This was also evident in their comments and those of the students in the student surveys.

The area of vision, class quality, customer satisfaction and continuous improvement were areas that were not implemented to the same level. I think that there have been improvements made in the model itself and by gaining experience, the area of establishing the vision and the values at the very beginning of class will improve. Continuous focus must be given to the fact that there are customers of these classes. Customer satisfaction can be tied in with the class quality and continuous improvement. The areas of class quality and continuous improvement are ones that will continue to improve as teachers gain experience in using the model.

This area is probably one of the more subtle aspects of the "Walk the Talk" model but can also be one of the greatest benefits. By actually having the students, once they have established that they own the process of learning, determine a key ingredient of that learning which would become the class quality. They could then use problem solving to make improvements throughout the semester.

TQM PILOT QUESTIONNAIRE

Name _____

Which of the following aspects of the "Walk the Talk" model did you use in your classroom this year? Please comment on any aspects that you wish. (Use the back of this sheet or additional sheets if necessary for comments.)

1. The teacher and class jointly developed a class vision. **YES** **NO**

   Comments: _____

   _____

2. The class determined and lived under a set of class "values". **YES** **NO**

   Comments: _____

   _____

3. The class identified its customers and measured their satisfaction. **YES** **NO**

   Comments: _____

   _____

4. The students worked as participating members of teams. **YES** **NO**

   Comments: _____

   _____

5. The students obtained and used problem solving and decision making skills. **YES** **NO**

   Comments: _____

   _____

6. The students defined and measured class quality. **YES** **NO**

   Comments: _____

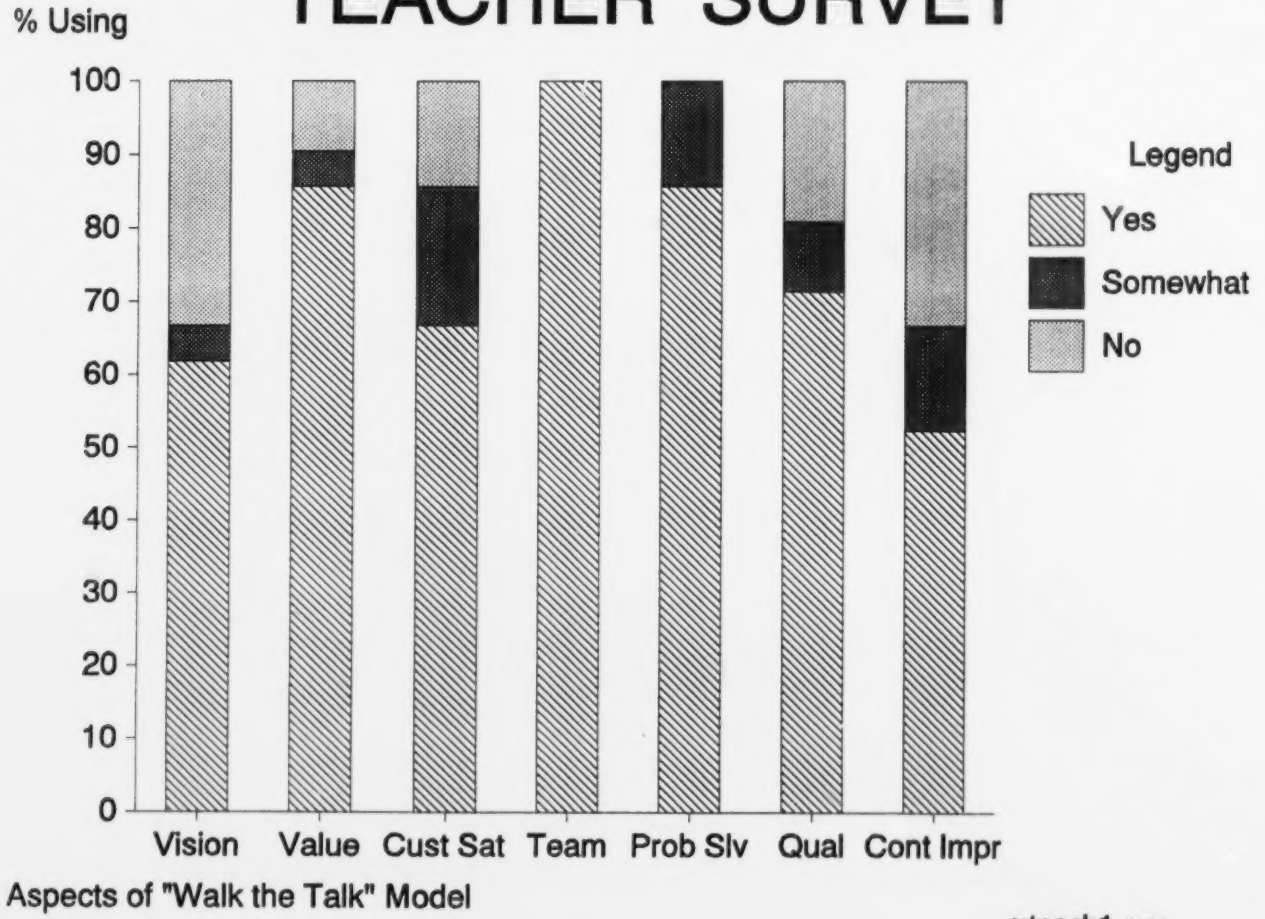
   _____

7. The students focused on one key measurement of class quality and stressed continuous improvement of this measurement. **YES** **NO**

   Comments: _____

   _____

TEACHER SURVEY



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E-9

TQM PILOT PROJECT STUDENT SURVEY

In order to be able to assess the effectiveness of the TQM "Walk the Talk" Pilot project, one of the key objectives was to assess student performance and student attitude as a result of these pilot programs. In order to accomplish this, surveys were sent to each of the pilot teachers for them to give to their students. A copy of this survey is shown on page F-8. Five questions were asked to judge how much the student had actually learned about the four cornerstones of TQM, how this particular class may have been different from other classes they have taken, how much they actually liked using TQM in their class, did they feel they learned more about the subject matter by using TQM, and finally, what was the most important thing they learned in their class.

These surveys were given to the students by the individual pilot project teachers. Seven hundred and thirty-nine surveys were returned, representing twenty two different pilot teachers. Once these surveys were returned, they were analyzed. The analysis of the results of the survey follows.

I. CORNERSTONES OF TQM:

Each of the students had an opportunity to rate how much they felt they had learned about the four cornerstones of Total Quality Management. These four cornerstones are customer satisfaction, continuous improvement, empowerment, and teamwork. Each student had an opportunity to rate what they had learned on each of these four cornerstones from a score of one to ten, with one being "not much" and ten being "a lot." The students therefore had an opportunity to say whether they had not learned much about a particular cornerstone or had learned a lot about it during class.

On the scale of one to ten, the average response for all four cornerstones was a 7.48. These responses were averaged for each of the pilot teachers. These averages were shown in a tabular form on page F-9 and graphically on page F-10. It can be noted by looking at the tabular information on page F-9 that the students clearly understood teamwork, or feel that they learned more about teamwork than the other three cornerstones. This correlates to the responses on the teacher questionnaire, where the teachers felt that each of their classes had implemented teamwork and were successful in its implementation.

Sixteen of the twenty-two classes rated the amount of information they learned about teamwork higher than any of the other three cornerstones. The average of all the classes was 7.99 for teamwork, which is substantially higher than any of the other cornerstones. The averages of what the students learned by their responses on the first question correlates with the amount of implementation by the classes. For example, teachers rated teamwork highest on implementation, and it also was the highest on what the students felt they had learned. By the same token, continuous improvement was slightly higher in implementation

than was customer satisfaction. The fact that the area of empowerment was the area that the students felt they had learned the least about is an anomaly.

The fact that the students were using TQM and had a say in their class is empowerment. I believe that, although they may not have learned something intellectually about the definition of empowerment, they were actually using it, implementing it, and knew what it was from a practical nature. However, when asked the question about how much they learned about empowerment, they were at a loss to be able to point out any specific item. This would lead one to believe that more emphasis should be put on explaining when students are being empowered and that by making decisions they are being empowered.

II. DIFFERENCE IN TQM CLASS:

Each student had the opportunity to write down a comment on how the class they were taking using TQM was different from other classes they had taken in the past. These comments were summarized for each class. By far the most common comment had to do with the fact that the class used teamwork. The second most common comment was that this class taught things that would help them in 'real life'. The third most common was the fact that the subject matter was different that other classes they had taken in the past. It is good to see that the students weren't considering this only a TQM class, but it was a class in whatever subject matter they were taking and therefore they did rate the fact that it was different subject matter as one of the most important differences of their classes. The fourth major difference between other classes was the fact that the students noticed there was a higher level of empowerment in this class than they had seen in other classes. Other comments related to the fact that it was more challenging, fun, and more relaxed with the ability to do hands-on activities in the class.

Some of the typical comments that were listed by the students were:

"We have the opportunity to interact with fellow students and give our suggestions in class. We leave with a feeling of confidence."

"It has been fun and I learned something I can actually use when I get in the real world."

"In this class, we talk about many things that can help us in our lives; and in my other classes, I just do the work that the teacher gives us."

"It has helped me in being more responsible for myself."

"The students had a larger say in what happened in the class. The students worked together more. The students had more responsibility."

"We are more involved in the learning process and can help set our own standards."

"Hands on activity everyday! Active discussions. Everyone is invited (and does) participate."

"This class has taught me to accept other peoples ideas and find a way for them to collaborate with my own."

"A lot of individual responsibility required. Respect for classmates is important. Assisting each other makes us better."

"It's more fun and an enjoyable class to be in."

"You work as a team and it's fun while you're doing it. I also feel I can see how this will help in college."

"We have a lot more direct involvement and decision making powers."

"There is a real emphasis on what the student wants to get out of it. This motivates and enhances the process of learning because there is a sense of control."

"We have gotten more done because we all work together!"

"We got to continually improve our paper; correcting mistakes, making a better grade."

"I have really enjoyed the activities in our class. I actually enjoyed coming & working. The work made me think in a creative way. Thanks!"

"We became a part of this class!"

"It's fun but it's a lot of work at the same time."

"It's more of an Independent Emphasis on Responsibility class."

"I think of this class as the real world, not really a class."

"Instead of listening to the teacher talk, we had input and fun learning."

"I took this class much more seriously than others. I feel that in learning TQM, it would help me more in the workplace than other subjects that I take."

"I really do appreciate the fact that responsibility, respect and a right to open ideas and suggestions is a big part of life and we got a sample in school."

"This class has prepared me for future careers and has given me experience in decision making."

"Sometimes TQM makes us have to fill out long redundant surveys when we could be working on our project."

"It's been more stressful in regards to this project and annoying because some people don't work!"

III. LIKED USING TQM IN CLASS:

The students had an opportunity to rate how much they liked TQM in the class on a scale from one to ten with a one meaning that they did not like it very much all the way to a ten which meant that they like using TQM a lot. The results of this question are shown on the bar graph on page F-11. The average response on this was 7.26.

It can be noted from the graph that the vast majority of the students rated the question from a 5 (average) to a 10. It must also be noted that there were several students that rated it really low with a 1.

By reading the comments from the students who rated it low, it can be seen that some of the students did not like working in teams. Several students seemed uncomfortable with using the concepts of Total Quality Management in their classroom.

IV. LEARNED MORE SUBJECT MATTER USING TQM:

The students were given four options in rating how much they felt they had learned about the subject matter using TQM compared to what they would have learned if they hadn't used TQM. This question requires a judgement on the part of the student.

The four choices that the students had on this response were: 1) they learned more, 2) they learned less, 3) they learned the same, or 4) they are not sure. The responses from all the students is shown in a bar graph on page F-12. 43.2% of the students felt they had learned more of the subject matter by using TQM in the class than they would have if they hadn't used TQM.

Twenty-six percent of students felt like they learned the same amount as they would have learned otherwise, with only 5.7% feeling like they learned less than they would have learned if they had not used TQM. Another 24.5% weren't sure they had learned more or not.

V. MOST IMPORTANT THING LEARNED IN CLASS:

Each of the students had the opportunity to respond to the question: "What is the most important thing you have learned in this class?". Their responses were summarized. Clearly the most frequently mentioned comment was the fact that the student had learned how to work in a team or some comment related to teamwork. The second most frequently mentioned item was the particular subject matter they were learning. Again it was good to see that the students recognized that this was not just a TQM class. It was their normal course.

Other areas that were mentioned consistently by the students concerning what they had learned were continuous improvement and quality, future job skills, responsibility, and customer satisfaction. (I think it is appropriate at this point to note that there may be a bias in the results of this survey because the students are filling out a TQM survey and they will tend to think more along the lines of TQM. I believe if a survey were given that was not identified as a TQM survey, there would have been more comments on subject matter than on teamwork.)

Listed below are many of the comments from the students:

"I have learned to be more sure of myself and how to focus on my work and not on negative behavior in class. I can focus a lot better."

"Not to be satisfied with the things the way they are; there is always room for improvement."

"To take more initiative in my job performance."

"The most important thing is about teamwork. When you put several minds together that work well, you can come up with extraordinary things.

"That if I try hard enough I can accomplish something, and if I fail I know that at least I tried."

"That teamwork within an organization creates better morale."

"I have learned to respect other's work and how to act in the business world."

"To work hard! Make improvements upon myself (self discipline), help others when I can."

"That everyone has to do their part to get the whole thing done. No ones job is more important than anyone else."

"The class is more interesting and rewarding. TQM provides incentive."

"The importance of doing your part - for yourself, group members and customers."

"Teamwork and computer challenges. This is no ordinary class. It's fun!"

"Teachers are really working for us. They are providing us a service."

"The ability to set one's own goals and then try to achieve them."

"I have learned to research and write more effectively."

"That you can go to the restroom when you really have to go."

"That working together can be a great way to achieve your goals."

"About taking care of small children and how to cook."

"Responsibility and how to control myself and know what to expect out there."

"The need to listen to employees."

"How to control my temper."

"Sometimes it's good to work together, but I usually work better as an individual."

"That I am not really a team worker."

VI. CORRELATION OF STUDENT RESPONSES:

After all the data was compiled in each of the classes, an average was taken of each class on the questions: 1) how much they like TQM 2) what they learned about the four cornerstones of TQM and 3) how much they felt they had learned about the subject matter. The results of this analysis is shown in tabular form on page F-13. The average of the four cornerstones was taken from the student responses from each class.

After an initial review of these averages, it was noticed that there appeared to be a correlation in the responses to the different questions. It was decided to do an analysis of the data using a correlation algorithm. The three questions listed above were plotted in relation to each other. These plots can be seen on pages F-14,F-15, F-16.

Once this data was plotted, it was correlated using the correlation algorithm in the Quattro software package. When using the software package, if there is over a 60% ratio, it is said that the two items being analyzed do have a direct correlation and if the percentage is 90%, there is a very good correlation. The range of reasonable correlation is between 60% and 90%.

Comparing the level of which students liked TQM to how they rated their learning of the four cornerstones is shown graphically on page F-14. Each data point on this graph represents one of the 22 teachers. There was a 74.7% correlation using Quattro. This demonstrates the fact that the more the students seem to have learned about TQM, the more they liked it. The correlation print out is provided on page F-17.

Page F-15 shows the data points from each of the twenty-two pilot classes representing what they've learned on each of the cornerstones compared to the percent they feel they have learned more subject matter. There is a 73.6% correlation of this data which signifies that the students appear to feel like they have learned more subject matter as they have learned more about TQM.

Page F-16 shows the data relating how much the students liked TQM compared with how much they feel they have learned of the subject matter. There was an 80.3% correlation of this data. This can be explained in two ways. One way would be to assume that the students really liked TQM and therefore they felt like they were learning more of the material of the course. A second explanation could come from the fact that students felt like they were learning more and enjoying the class, therefore they conversely said that they liked TQM.

I believe it would be fair to say that the more the students seemed to have learned about TQM the more they liked it. In turn, the more they liked it, the more they felt they had learned from their course. This would tend to lead one to believe that there is a correlation between the use of TQM and the ability to improve students grades. This can be demonstrated in the results from many of the pilot classes as recorded in the final reports of the teachers.

VII. SUMMARY:

The student surveys clearly demonstrate the fact that the vast majority of the students enjoyed the use of TQM in their classes. They seemed to really enjoy the responsibility and the ability to work in teams. They also pointed out the fact that they learned the subject matter as well as the "real world" skills they received by using TQM. It must be noted that there were a few students who did not like TQM.

TQM STUDENT SURVEY

Teacher _____

Period _____

1. How much do you think you have learned about each of the following areas of TQM? (circle one number on each)

		Not Much									A Lot
A.	Customer Satisfaction	1	2	3	4	5	6	7	8	9	10
B.	Continuous Improvement	1	2	3	4	5	6	7	8	9	10
C.	Empowerment	1	2	3	4	5	6	7	8	9	10
D.	Teamwork	1	2	3	4	5	6	7	8	9	10

2. How has this class been different from other classes you have taken?

_____

_____

_____

3. How much have you liked using TQM in class? (circle one number)

Not very much 1 2 3 4 5 6 7 8 9 10 A lot

4. By using TQM principles in this class, do you think you learned more about the subject matter than you would have if you hadn't used TQM? (circle one)

More Less The same Not sure

5. What is the most important thing you have learned in this class?

_____

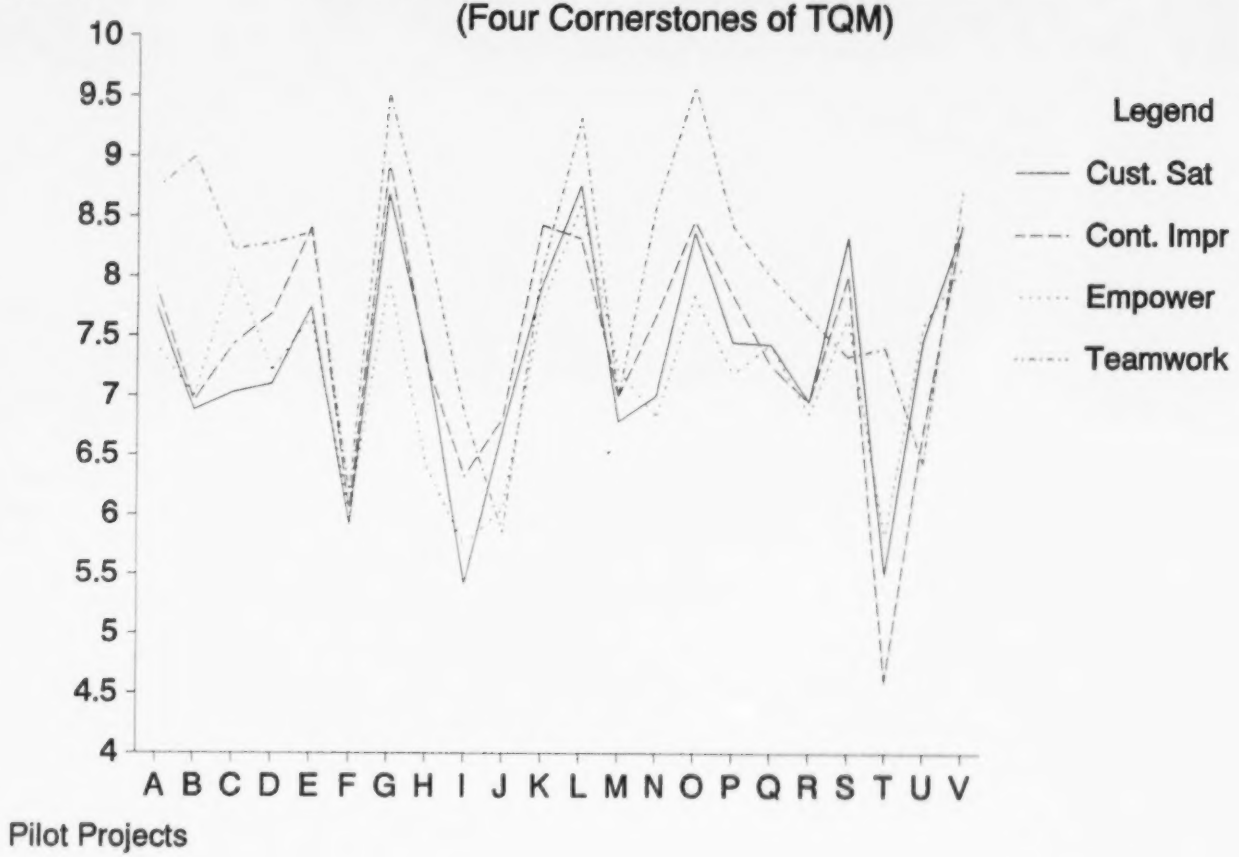
_____

SUMMARY OF STUDENT RESPONSES ON THE FOUR CORNERSTONES OF TQM
Rate from 1 (not very much) to 10 (A lot)

Pilot Teachers	# Students	Cust. Sat.	Cont. Impr.	Empower	Teamwk	Avg
A	38	7.74	7.89	7.42	8.74	7.95
B	77	6.88	6.96	7.00	9.00	7.46
C	35	7.03	7.43	8.06	8.23	7.69
D	66	7.10	7.67	7.21	8.28	7.56
E	54	7.74	8.41	7.66	8.37	8.04
F	66	5.92	6.03	6.03	6.18	6.04
G	55	8.69	8.95	7.98	9.51	8.78
H	17	7.35	7.29	6.41	8.29	7.34
I	26	5.42	6.32	5.75	6.85	6.09
J	21	6.71	6.81	6.05	5.86	6.36
K	14	7.93	8.43	7.79	8.07	8.06
L	25	8.76	8.32	8.60	9.32	8.75
M	14	6.79	7.00	7.21	7.00	7.00
N	12	7.00	7.67	6.83	8.61	7.53
O	19	8.37	8.47	7.84	9.58	8.56
P	31	7.45	7.84	7.19	8.42	7.73
Q	23	7.43	7.26	7.43	8.00	7.53
R	20	6.95	6.95	6.85	7.65	7.10
S	3	8.33	8.00	7.66	7.33	7.83
T	10	5.50	4.60	5.80	7.40	5.83
U	34	7.47	6.68	7.59	6.44	7.05
V	59	8.41	8.44	8.08	8.71	8.41
	32.7	7.31	7.43	7.20	7.99	7.48

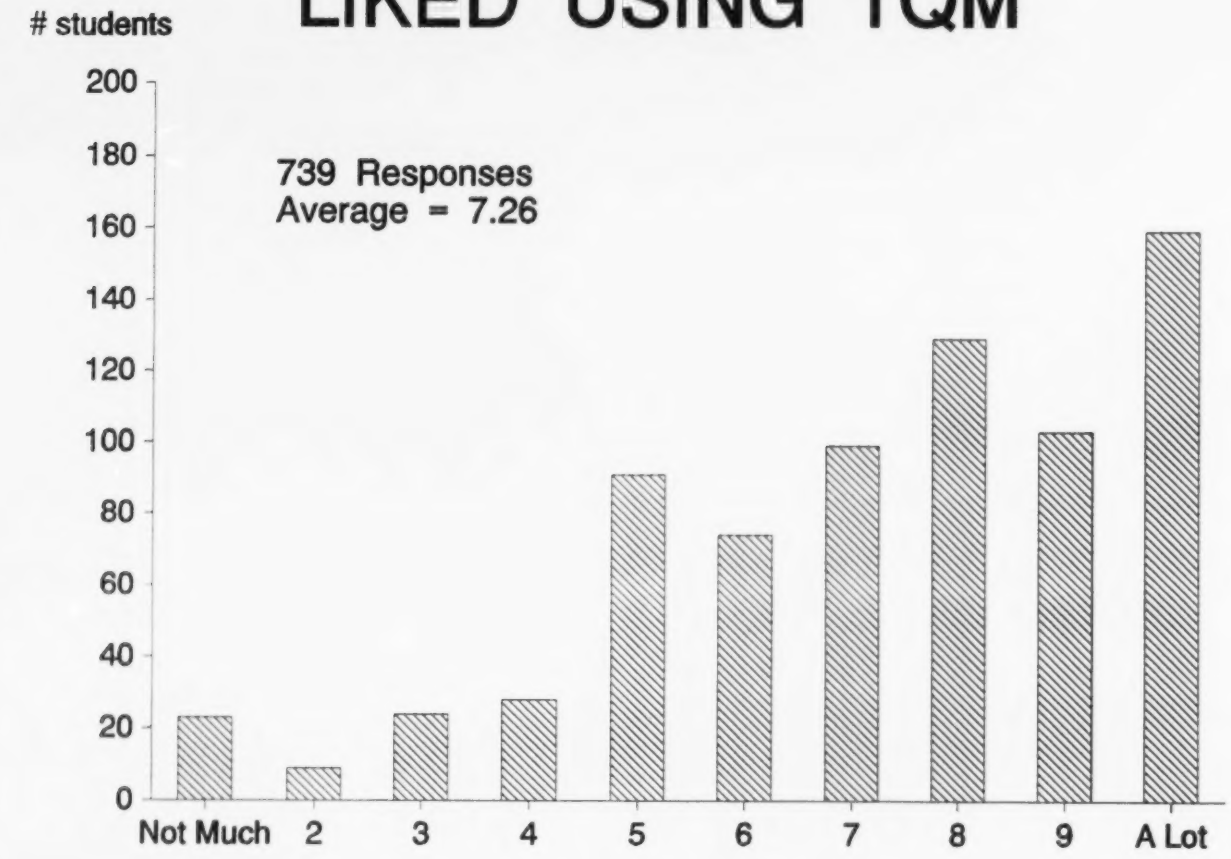
STUDENT AWARENESS

(Four Cornerstones of TQM)



stusvy2.wpg

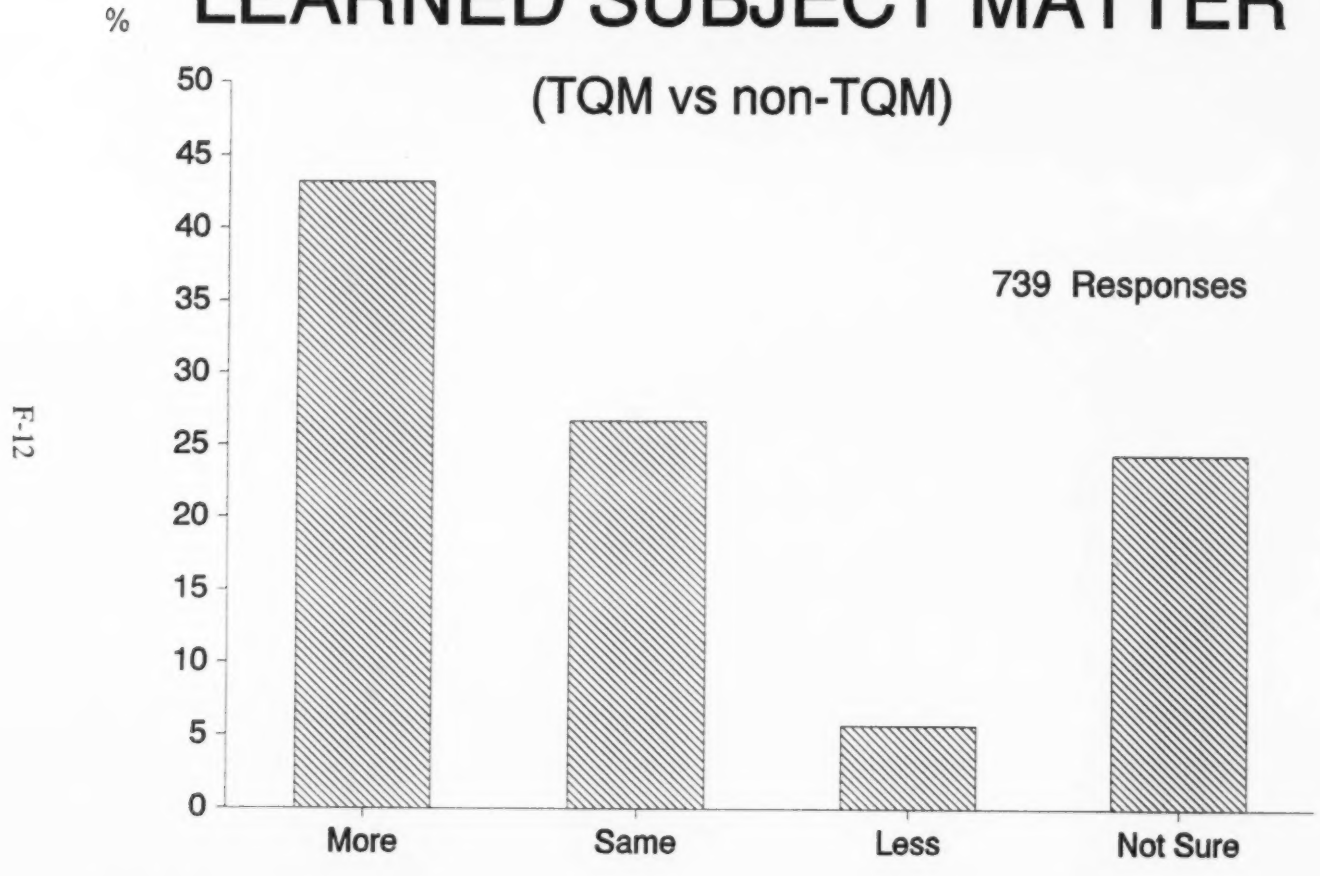
LIKED USING TQM



C:liked.tqm

F-11

LEARNED SUBJECT MATTER



F-12

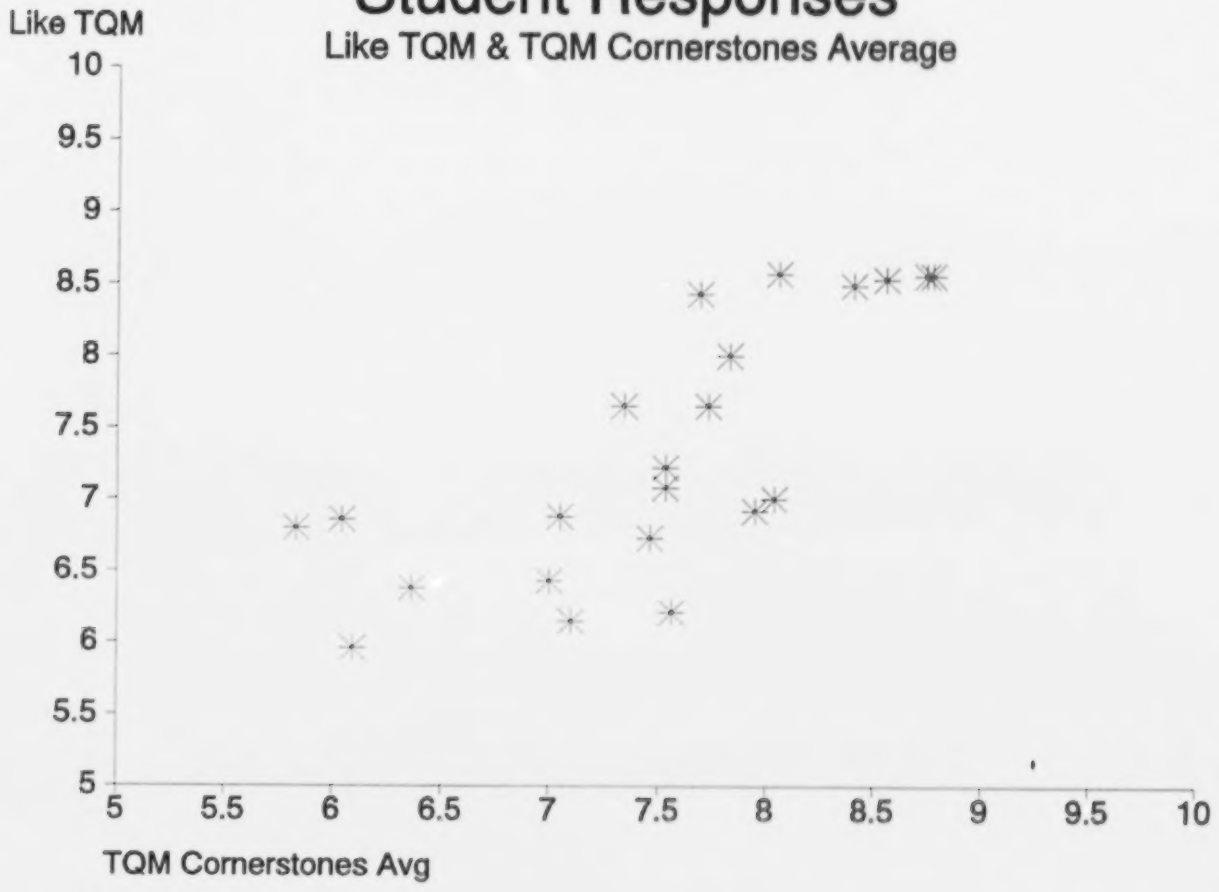
c:submat.wpg

SUMMARY OF STUDENT SURVEYS

Pilot Teacher	Liked TQM	Avg of TQM Cornerstones	Percent Learned More Subject Matter
A	6.92	7.95	44.7
B	6.73	7.46	31.6
C	8.43	7.69	51.4
D	6.21	7.56	30.3
E	7.00	8.04	30.7
F	6.86	6.04	21.2
G	8.56	8.78	75.9
H	7.65	7.34	64.7
I	5.96	6.09	30.8
J	6.38	6.36	38.1
K	8.57	8.06	64.3
L	8.56	8.75	80.0
M	6.43	7.00	35.7
N	7.08	7.53	38.5
O	8.53	8.56	84.1
P	7.65	7.73	51.7
Q	7.22	7.53	47.8
R	6.15	7.10	25.0
S	8.00	7.83	100.0
T	6.80	5.83	10.0
U	6.88	7.05	20.6
V	8.49	8.41	62.6

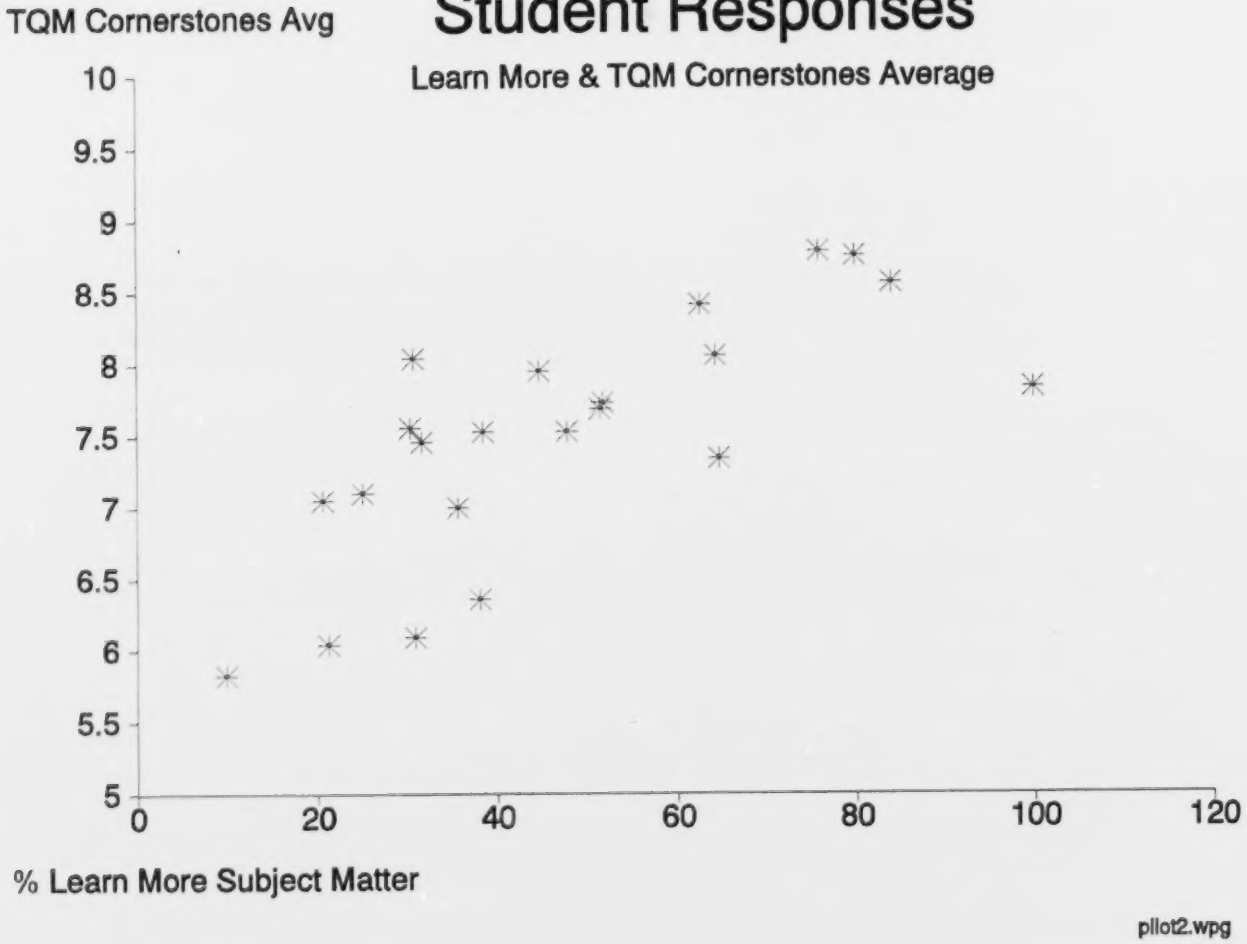
Student Responses

Like TQM & TQM Cornerstones Average



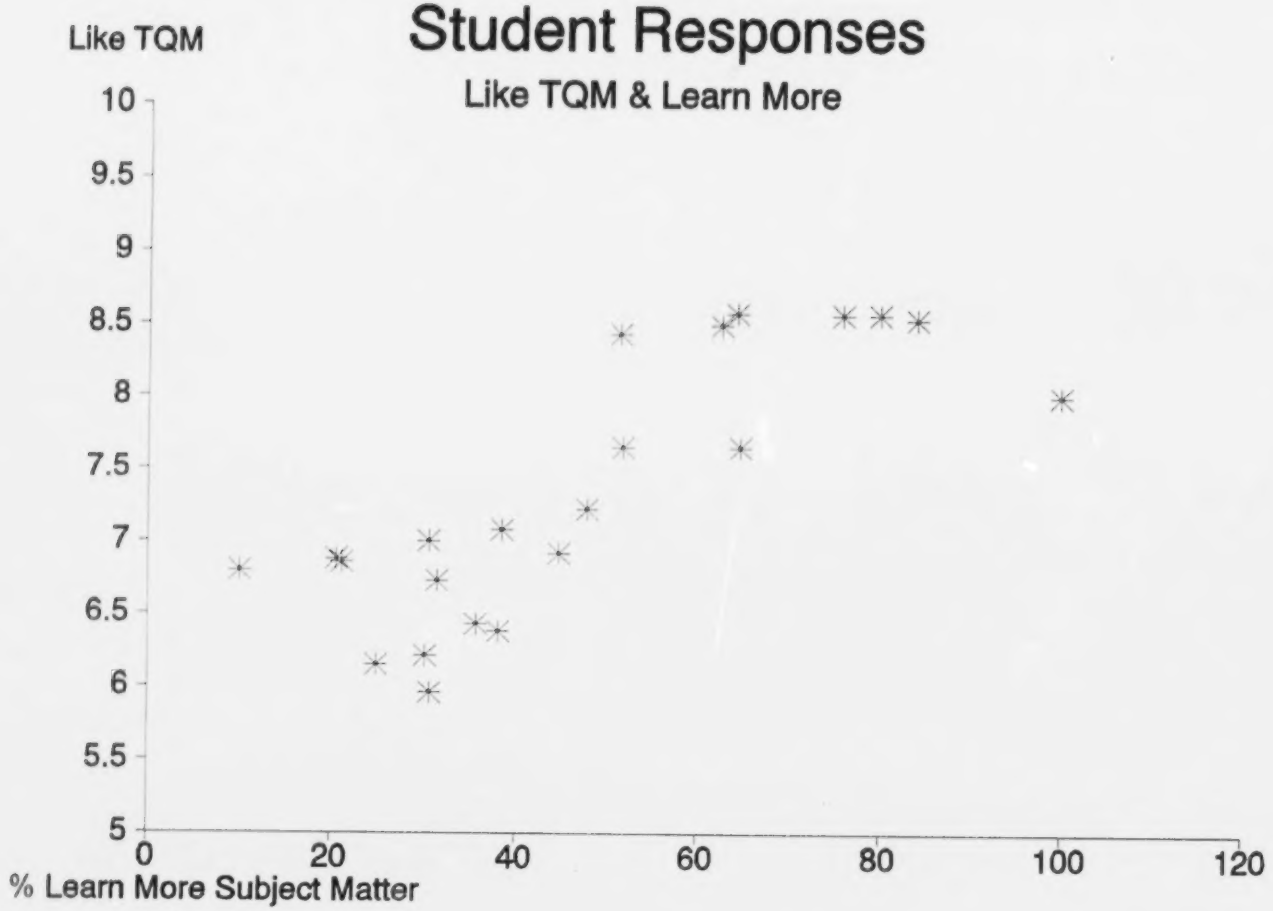
pilot3.wpg

Student Responses



pilot2.wpg

Student Responses



05/10/94 Pilot Teacher's Summary of Student Surveys

Teacher #	TQM(like)	AVG. CNR	% LRN >	TQM(like)
A	6.92	7.95	44.7	6.92
B	6.73	7.46	31.6	6.73
C	8.43	7.69	51.4	8.43
D	6.21	7.56	30.3	6.21
E	7.00	8.04	30.7	7.00
F	6.86	6.04	21.2	6.86
G	8.56	8.78	75.9	8.56
H	7.65	7.34	64.7	7.65
I	5.96	6.09	30.8	5.96
J	6.38	6.36	38.1	6.38
K	8.57	8.06	64.3	8.57
L	8.56	8.75	80.0	8.56
M	6.43	7.00	35.7	6.43
N	7.08	7.53	38.5	7.08
O	8.53	8.56	84.1	8.53
P	7.65	7.73	51.7	7.65
Q	7.22	7.53	47.8	7.22
R	6.15	7.10	25.0	6.15
S	8.00	7.83	100.0	8.00
T	6.80	5.83	10.0	6.80
U	6.88	7.05	20.6	6.88
V	8.49	8.41	62.6	8.49

	Like TQM	AVG CNR
Like TQM	1	
AVG CNR	0.7466287	1

	AVG CNR	%LRN>
AVG CNR	1	
%LRN>	0.7360089	1

	%LRN>	Like TQM
%LRN>	1	
Like TQM	0.8031883	1

PILOT TEACHERS REPORT SUMMARIES

Each pilot teacher submitted a formal report of their project which included the following information:

1. Expectations
2. Implementation
3. Results
4. Recommendations

It was prohibitive to reproduce each of these individual reports in their entirety, therefore summaries are provided on the following pages.

Each report is summarized in order to provide the reader with a brief outline of the pilot project. A **pilot identification** provides information on the teacher, course and location.

The **description** gives a brief synopsis of the implementation of TQM in class. Finally, the **results** provides a summary of the benefits achieved in the classes.

Complete copies of each of these reports are available from the TQM/Tech Prep project office by using the order form on page I-1.

PILOT IDENTIFICATION:

Jim Anderson
Marketing Education
Austin High School
Austin, Texas

DESCRIPTION:

TQM was introduced to three classes of "at risk" high school students. These students had the opportunity to help set their class "values" and rules for the first time. They resolved class problems through problem solving methods.

The class focused on class quality, set their own grading criteria, and worked effectively in teams. They also used many creative approaches to implement and understand customer satisfaction.

RESULTS:

1. Students developed a strong sense of teamwork.
2. Very rewarding to the teacher.
3. High level of student empowerment, acceptance of responsibility, and liberation.
4. Students became more proficient in critical thinking through using the problem solving process to resolve classroom problems.

PILOT IDENTIFICATION:

William Bacon
Multi Occupation Cooperative Education
Evening High School
Austin, Texas

DESCRIPTION:

This pilot is composed mostly of students who are single parents, live on their own, work 40 hours per week and attend high school in the evening. The four cornerstones of TQM were explained prior to introducing the "Walk the Talk" model.

The class raised the minimum standard for passing from 70% to 80%. The class set very aggressive goals for themselves and met them.

RESULTS:

1. Reduced stress on the teacher.
2. Class average for course improved from 74% to 91%.
3. There was a 60% reduction in the class time required to master the subject matter.
4. Improved student/teacher relationship.
5. Reduced class preparation time for the teacher.
6. Teacher has become a better teacher for the students.

PILOT IDENTIFICATION:

Tom Brouillard
Introduction to Business
Bee County College
Alice, Texas

DESCRIPTION:

Two beginning business classes were compared for the Fall '93 semester. One class used the "Walk the Talk" model and the other one did not. It was also possible to compare the results of the previous semester with these classes.

The class using the "Walk the Talk" model established class visions, values and worked in teams. The class also established their own grading system and absentee policy. The class also used "mind mapping" for taking notes.

RESULTS:

1. Weekly student surveys were used to improve the class.
2. Grades were higher in the "Walk the Talk" class.
3. Attendance was higher in the "Walk the Talk" class.
4. The class was fun for both teacher and students.
5. Students developed an ownership for their learning.

PILOT IDENTIFICATION:

Tom Collier
Industrial Technology
Westlake High School
Austin, Texas

DESCRIPTION:

TQM concepts were used in classes with mixed grade levels from ninth grade to eleventh grade. The students were empowered to develop class values as well as a list of privileges and responsibilities. The classes also was able to assess their own work against a list of teacher provided guidelines.

RESULTS:

1. Student behavior improved with no discipline referrals all year.
2. A non-adversarial relationship developed between the teacher and students due to empowering students.
3. Underclassmen who do not want to be in class have more problems with TQM concepts.
4. The students showed responsibility in adhering to their list of privileges and responsibilities.

PILOT IDENTIFICATION:

Carolyn Davis
Microcomputer Applications
James Madison High School
Dallas, Texas

DESCRIPTION:

TQM concepts were discussed during the beginning of the school year. The students developed values for their class. The students worked in teams and reviewed their peer's papers. TQM was given to exceptional work and PNI (paper needs improvement) was given to papers needing improvement. This allowed a focus on continuous improvement.

RESULTS:

1. Teamwork allowed the students to:
   a. better understand class goals
   b. work toward high standards and ways to improve
   c. improve their responsibility
   d. make better decisions through consensus
   e. develop new concepts and creative ideas
2. The TQM concepts were easily incorporated into the daily curriculum.
3. Students learned to respect and value the opinions of others.
4. The students enjoyed the class.

PILOT IDENTIFICATION:

John Davis
Industrial Technology
Willowridge High School
Sugar Land, Texas

DESCRIPTION:

Class values were established by each class during the first two days of school. TQM was introduced in the fifth week. The classes divided into teams and focused on continuous improvement projects. The classes were actively involved in various aspects of grading and assessment.

RESULTS:

1. Some students with low motivation have trouble accepting the concepts of TQM.
2. One class covered more material than possible in the past, plus learned TQM.
3. The teacher used the concept of continuous improvement to try new ideas in class.
4. Empowerment does not work successfully if the students don't demonstrate trustworthiness.

PILOT IDENTIFICATION:

Mabyn Day
Office Support Systems
Silsbee High School
Silsbee, Texas

DESCRIPTION:

The "Walk the Talk" model was introduced to a class of sixteen average students in Microcomputer Applications. In addition to using TQM, the teacher stressed the importance of relating school to the work environment.

The students continually used TQM concepts to relate classroom activities to "real world" experiences such as teamwork and values.

RESULTS:

1. Students developed a positive work ethic.
2. Students exhibited more discipline and interest than similar classes.
3. Students took pride in their behavior and work.
4. Grades improved over classes in the past.

PILOT IDENTIFICATION:

Elaine Farrar
Microcomputer Applications
Tascosa High School
Amarillo, Texas

DESCRIPTION:

The TQM model was implemented in five classes along with the concept of "families." The concept of "families" fostered teamwork.

The students identified customers of their classes and also were involved in establishing criteria for grading their papers.

RESULTS:

1. The students felt more in control of their learning.
2. Time devoted to discipline was minimal and time devoted to learning was great.
3. The students developed loyalty to their "families."
4. Higher grades and higher competence in skills.
5. The students were willing to attempt more difficult concepts in the safety of their "families."

PILOT IDENTIFICATION:

Pat Gutknecht
Microcomputer Applications
McCullough High School
The Woodlands, Texas

DESCRIPTION:

The TQM model was used for four classes in Microcomputer Applications. These students worked on interdisciplinary projects with members of an English III class. Most of these projects revolved around working with elementary students.

During and in between collaborative projects, a great deal of emphasis was placed on: reinforcing class values, identifying and satisfying customers, setting product quality goals and continuous improvement. The class decided on "0 defects" in grading would equal 100. They incorporated the opportunity to "redo" assignments.

RESULTS:

1. The percentage making A each six-week period increased by about 15%.
2. Reduced discipline referrals due to use of values.
3. By empowering students, responsibility for student behavior and performance shifted from the instructor to the student.
4. Less stress on the teacher.

PILOT IDENTIFICATION:

Dorothy Hetmer-Hinds
Management
Trinity Valley Comm. College
Athens, Texas

DESCRIPTION:

The "Walk the Talk" model was implemented with both a day and evening class in Organization Behavior. The model was introduced into both classes after the first test. The classes had input into the grading system and the types of tests given.

Many activities in the class were done as self-directed teams including a "team test." Final presentations were conducted by the teams.

RESULTS:

1. Self-directed workteam tests resulted in grades of 85 and above for all members.
2. Increased student empowerment and acceptance of responsibility.
3. Students liked team exercises and interaction.
4. Increased student enthusiasm.

PILOT IDENTIFICATION:

Jeannine Hirtle
English III
McCullough High School
The Woodlands, Texas

DESCRIPTION:

Four language arts classes formed teams with students in microcomputer classes to perform projects, one of which was to write a children's book for a particular elementary student. They also implemented the concepts of customer satisfaction, teamwork, and continuous improvement within their own class. TQM was used in conjunction with collaborative learning.

RESULTS:

1. The use of class values helped keep the class organized.
2. The students liked treating the elementary students as their customers, but would have liked more feedback on their book project.
3. The students gained experience in teamwork.
4. The students became empowered decision makers.
5. The teacher became a "guide on the side" rather than a coercive, authoritarian figure.

PILOT IDENTIFICATION:

Michelle Huckabee
Marketing Education
Belton High School
Belton, Texas

DESCRIPTION:

The concepts of TQM were used in all classes. This was the second year of TQM for one class. Each class established their values, customers and measures of class qualities.

The class participated with the local chamber of commerce to design and conduct students' shopping surveys.

RESULTS:

1. Second year students showed a better understanding of TQM.
2. Designing and administering surveys helped students understand the concept of customer satisfaction.
3. Students showed increased responsibility.

PILOT IDENTIFICATION:

Kimberly Lee
Marketing Education
Tascosa High School
Amarillo, Texas

DESCRIPTION:

The principles of TQM were introduced to two marketing education classes. Each class identified their own vision and values which were combined into a common list. The classes divided into teams using different methods.

RESULTS:

1. Students gained experience in teamwork.
2. Identified the need to have students establish quality standards and adhere to them.
3. Determined the importance of focusing on class values when students did not follow them.

PILOT IDENTIFICATION:

William Lesso
Mechanical Engineering
University of Texas
Austin, Texas

DESCRIPTION:

The TQM "Walk the Talk" model was introduced in an undergraduate course in mechanical engineering computations made up of sophomores through seniors. The last fifteen minutes of the seventy-five minute class were devoted to discussing TQM.

Many different ideas were used in class. These included tailoring the way final grades were assessed (homework, tests, and final) for each student and developing a set of privileges, responsibilities, and consequences for the class.

RESULTS:

1. Course grades improved.
2. The students enjoyed the course which had the reputation as being one of "the worst courses" in the department.
3. Some students had trouble accepting the fact that they were learning about TQM in a computation course.
4. Even after two semesters of implementation, the entire "Walk the Talk" model hasn't been totally integrated.

PILOT IDENTIFICATION:

Elaine Loughlin
English
Palo Duro High School
Amarillo, Texas

DESCRIPTION:

The TQM "Walk the Talk" model was implemented in two English III honors classes. The classes developed ten class goals along with strategies for achieving these goals.

Students set quality standards and evaluation criteria for each project. The class also developed a system to "redo" a paper if the grade was below 80%. A comprehensive survey was used after six weeks to obtain student input.

RESULTS:

1. Reaction to student empowerment was exceptionally positive.
2. Reduced student confrontations regarding grades (they set the criteria).
3. Deficiency reports decreased from 17% last year to 2% this year.
4. Students demonstrated more responsibility.
5. Overall class average increased from 88% last year to 93% this year.

PILOT IDENTIFICATION:

Jill Miller
Marketing Education
Palo Duro High School
Amarillo, Texas

DESCRIPTION:

TQM was introduced to the parents and students on the first day in the form of a letter to parents and posters in the classrooms. On the first day, the teacher displayed banners in the classroom promoting TQM.

The four cornerstones of TQM were explained and the students were treated as customers. The students were able to assign part of their grade. They also established class rules as well as class values.

RESULTS:

1. Teacher commitment to the concept helps assure success.
2. The students accepted responsibility for the class.
3. The students were able to do self-evaluation fairly.
4. Since the class established the classroom values and rules, no one challenged them.
5. The teacher's job was easier in running the classroom.
6. The students had very positive attitudes.

PILOT IDENTIFICATION:

Teresa Parish
English
Hardin-Jefferson High School
Sour Lake, Texas

DESCRIPTION:

TQM principles and tools were successfully incorporated into the study of American literature and language arts for junior and freshman honors classes. Student projects and products reflected real-world applications and the classroom became student-driven.

TQM was implemented using creative "power plays" (strategic games) which were designed by the teacher to promote students' problem solving and quality improvement techniques.

RESULTS:

1. Student enthusiasm was far greater than in past years.
2. There were no discipline problems.
3. Attendance and productivity were improved.
4. Grades were better.
5. Quality became "Job #1."
6. Students learned real world skills.

PILOT IDENTIFICATION:

Rebecca Perkins
Microcomputer Applications
Tascosa High School
Amarillo, Texas

DESCRIPTION:

The TQM model was implemented in two - 2 hour classes while using existing methods in a one-hour class. The concept of "families" was used to incorporate teamwork.

The "families" provided a means of enforcing class "values," allow for peer teaching as well as providing a support system for the students.

RESULTS:

1. Students were able to resolve conflicts without intervention.
2. Students were resourceful in solving problems.
3. Marked improvement in student skills and understanding in several areas.
4. Skills in using Lotus 1-2-3 were much higher than ever seen before.
5. Highest number ever of students qualifying for state and national contests.

PILOT IDENTIFICATION:

Pat Schumacher
Home Economics
Lopez High School
Brownsville, Texas

DESCRIPTION:

Five classes in home economics were introduced to the concepts of total quality management. The classes followed all the steps of the "Walk the Talk" classroom model. The teacher also used TQM information gained through seminars and reading to supplement the model.

Emphasis was placed on customer satisfaction. Community members were interviewed with many of them coming to class to share their comments. These comments were videotaped. Problem solving was used extensively.

RESULTS:

1. The "Walk the Talk" model provided good guidelines for implementing TQM in the classroom.
2. Greatly improved behavior and attitudes of students.
3. Students were more focused due to the class vision and customer satisfaction focus.
4. Students have accepted responsibilities thus allowing the teacher to become a manager rather than an enforcer.

PILOT IDENTIFICATION:

Jim Swift
Multi Occupation Cooperative Education
Evening High School
Austin, Texas

DESCRIPTION:

The concepts of TQM were introduced to a core group of twenty-four students. The students used the cornerstones to relate to both school and work experiences.

The students worked in teams of four to develop definitions of class quality.

RESULTS:

1. Students worked harder in teams.
2. Students gained an understanding of TQM as it applies both to school and work.

PILOT IDENTIFICATION:

Chita Welch
Special Education
Cedar Crest Campus
Belton, Texas

DESCRIPTION:

The TQM "Walk the Talk" model was used in three English classes, one social studies class, and later a math class. The class sizes are small, contain students from the fifth through the eight grades, and are characterized by a high turnover rate.

The students developed a set of values for each class and had new students accept the values when joining the class. The classes performed many projects as teams.

RESULTS:

1. The students learned to work in teams.
2. The grades improved dramatically from last spring. The percent A/B's improved from 25% to 63% and the percent D/F's decreased from 44% to 12%.
3. The students were able to accept more responsibility.
4. The behavior and attitude of the students improved.

TQM CLASSROOM IMPLEMENTATION IDEAS

The most commonly asked question that I received is: "How can I implement TQM in the classroom?" This section will be devoted to ideas that have been used by pilot teachers in implementing TQM in their classrooms. Each idea will be named and a descriptive summary will be provided to assist in understanding how to implement the idea.

I. TQM SIGNS IN CLASSROOMS:

One teacher put up signs at the beginning of the school year on the door and inside the classroom that said such things as "A Total Quality Classroom: Where the customer (student) comes first!" Another sign was used that said "Welcome to a TQM Classroom, where the student matters." These signs helped generate curiosity and made the students more receptive to the TQM concepts when they were mentioned. This same teacher made up sign of the class values once they were agreed upon by all of her classes. It is fairly common to put up the class values and the class vision on a focal wall so the students can see them.

It is helpful if there is a single class vision for all the classes and a single set of values. It makes it more confusing if there are different values for each class. This can be managed by having a separate chart for each class, that would have the vision and the values for that class listed. One teacher plans to have four banners made for this next year which will have one of the four cornerstones on each of them. She will then hang these banners in her classroom.

II. LETTERS TO PARENTS ON TQM:

One teacher sent out a letter to each parent/guardian at the beginning of the school year describing what would be expected in the class. She also used this as an opportunity to introduce the fact that they will be studying the concepts of Total Quality Management in the class this year. The teacher gave a brief explanation of what she expected to see as benefits from TQM and how their child should be expected to react.

This gives a good opportunity to get some support at home. It can also be a potential way of introducing the concept of customer/supplier to the parents. A well structured letter can even be used as a initial survey of what the parents' expectations are from the class.

III. STUDENT SELF EVALUATION

Self evaluation by students was used by several different teachers. One example was in a co-op course where every student worked. The students as well as the employer had an opportunity to give grades. One student gave herself a 100, which the teacher thought was a problem until she found that the student's boss had also given the young lady a 100 with the comment that this was the best employee they had ever had. It appears that most students give reasonable self-evaluations. However, this can be a problem with younger, less mature students who do not really understood the concept of empowerment and who have not proven themselves trustworthy.

IV. TEACHER/STUDENT EXPECTATIONS:

The students were given an opportunity at the beginning of the course to come up with what they expected of the instructor and they were also to come up with what should be expected of them. This example provides an opening for two different TQM concepts, one of which would be the class values and the other would be the quality measurements.

V. CLASS GRADING SYSTEM:

Several of the pilot projects allowed the students to establish a method of grading. This could consist of the students determining the percentages for homework, tests, and the final. Also, if there was a notebook, this percentage was added. The ground rule that seemed to remain constant with all the teachers who were using this concept, was that each area must have a minimum score and no particular area could go beyond a certain maximum level.

These ideas seem to work in all cases. There was at least one example where the students wanted the notebook to count 60%. They felt that this would enable them to make passing grades without having to put much effort into the course. The students wanted a revision of the grading system part way through the six-weeks when they determined they were not going to be able to finish their notebooks in time. In this particular situation, the teacher said that the students were responsible for setting the grading system and they would be graded accordingly, but at the beginning of the next six-weeks they could revise the system, if they so chose.

VI. ATTENDANCE AND TARDINESS POLICIES:

Several of the classes determined their own attendance and tardiness policies. The students tended to be a little stricter than the instructor normally is and they tended to live up to these policies. One class gave 10 points to each student at the beginning of a six-weeks and

for each minute that they were tardy, one point was taken away. This was an incentive for the students to have fewer tardies. Care must be taken in allowing the students total freedom in establishing absent and tardy criteria. At least one class was a little too lenient with itself in establishing it's tardy policy.

This is an area where the teacher can establish a general comfort zone that the students must work within. If the students fail to stay within this reasonable range, the teacher can ask them to make revisions until their policy does fall within what the teacher considers to be reasonable.

VII. CLASS EVALUATIONS (SURVEYS):

Surveys were used by several of the teachers. Some teachers, especially at the college level, used class evaluations every week or two-weeks. Several of the high school teachers used the evaluations after a particular project or at the end of the six-weeks. The use of these evaluations was very informative and each of the teachers that used them, used the results to make continuous improvements in their classes.

One teacher surveyed his class using forty questions which covered all aspects of the student/teacher relationship. When he implemented the students' suggestions, they were surprised but responded positively. The class carried the attitude of customer satisfaction to their relationships at home, with friends, at work, and at school.

The use of these evaluations or surveys of the students provided two benefits. One was that it allowed a way to make continuous improvement in the course. Secondly, it also let the students know that they were being treated as a customer and had input into the class.

VIII. ESTABLISHING GROUPS OR TEAMS:

Several methods were used by the different teachers to establish teams in their classes. One idea was to have students select a piece of paper of different colors. Those students with the same color would be in a group. Another idea that was used was to select team leaders, and let each one of these leaders choose their team. One class decided to number off to form their teams.

One class formed new teams each six weeks. Teams of four were split between stronger and weaker students. No changes were allowed during the six week period. Once the students understood they had to work with the others on the team, they accepted the concept.

Two teachers divided their classes into "families." These families worked as a team and also provided "family" support. These "families" enforced class values and helped train each other. No "divorces" were allowed.

Some teachers had more success allowing the students to choose their own teams, others had more success having the teams selected randomly, while others had input into the team section process. I think the key idea here is to try whichever method works best for you, but don't be afraid of some conflict that might result depending on whichever method is used.

IX. STUDENT SELF ASSESSMENT:

Student self assessment was used by several pilot teachers this year. Usually this was done either by one team evaluating the work of another team, or by having students actually assess their own work. A problem that can arise from this is that all students aren't honest, and even though they have standards established for assessment, they may not follow those and could actually give grades for incomplete work. One way to improve this is to have the students provide more input into the standards, understand the importance of the standards, and then develop a methodology, whether it is peer evaluation or self evaluation built on honesty and integrity.

X. CLASS PROJECT:

One teacher allowed the students to design and build suggestion boxes. This was an industrial technology class which lent itself to this kind of activity. The concept was to allow the students to go through each stage, from the design to the manufacture of the product and make continuous improvements in both the design and the manufacturing process. Due to time, it was difficult to perform the number of cycles necessary to make continuous improvements in both the design and the actual manufacturing process itself. This particular teacher decided that, in the future, he will probably provide a design and allow the students to make continuous improvements in different manufacturing technologies.

XI. INTERDISCIPLINARY PROJECTS:

Two of the pilot teachers, one language arts teacher and one microcomputer applications teacher, teamed up to do several interdisciplinary projects. They had groups of two students, one from each class, work together in these collaborative projects. These students collaborated and taught each other the material, as well as developed a project for an elementary student.

The two high school students worked closely with an elementary student to design and produce a children's book for Christmas. They got input from the elementary student, (the customer) and then did benchmarking to obtain good ideas from other children's books. They then had the elementary student visit the high school where the computer students taught the elementary students how to use the computer to draw some of their own pictures. The final project was a completed children's book. One comment that came back from one student was that they wished that they could get more feedback from the elementary students.

XII. GROUP ESSAYS:

One pilot project in language arts had groups read particular books. They would then have the students work in small or large groups to write essays on this particular book. The teams would then share their work with the entire class.

XIII. "REDO":

Several pilot teachers decided that they would allow the concept of "redo" to be used in their classrooms. This was usually done with the collaboration of the students and the teachers. A certain criteria was established; for example, anyone who had made below an 80% on a paper would have the opportunity to "redo" it. There were several elements that were common through most the different "redo" projects. One of these was that the student cannot possibly make a 100% on a "redo". Another common element was that the teacher or students would have a chance to evaluate the paper and point out those areas that needed improvement. The original student would then have the opportunity to go back and redo the work in order to make improvements.

Although this concept can lead to concern about the students not doing their best work at first, it appears that, at least in these pilot projects, the students take this in a very responsible manner. Again, usually the student cannot make a perfect grade no matter how many times they "redo' it.

XIV. PEER REVIEW OF PAPERS:

One class had the student's peers review the paper after a "mastery" exercise. If the student determined that the paper met the standard that had been established, a TQM was put on the paper. If the paper needed improvement, the letters PNI (Paper Needs Improvement) were written on the papers. These papers were then returned to the owners and discussed. This is very similar to the "redo" project where the students have an opportunity to revise the paper and make improvements. This has a secondary benefit in that the students who

were doing the evaluation were better able to learn what was required. The students were not only able to help develop standards but also were able to judge those standards.

XV. TEAMWORK SURVEY:

One teacher gave the students a survey to determine the benefits they were gaining from working in teams. Several of the questions that were asked were:

1. Does teamwork help you understand and support the objectives of the class?

2. Does teamwork help you meet or improve high standards?

3. Does teamwork help you contribute and fulfill responsibilities to continuous improvement?

4. Does teamwork help you to listen to other people?

5. Does teamwork provide you an opportunity to gain technical support and discover new concepts, techniques and creative ideas?

6. Were decisions on the team based on consensus?

7. What did you think of the overall concept of teamwork that you used in the class?

XVI. CLASS VALUES\PRIVILEGES\RESPONSIBILITIES:

Two of the pilot teachers used the concept of allowing the students to come up with a list of privileges, responsibilities and consequences. The students could determine privileges that they wanted in class. Secondly, they would have to determine what their responsibility was in order for them to have that privilege, and thirdly they determined what would happen if they were not responsible. This was a very interesting exercise in the concept of empowering students. One example that was given from the two different classes was "eating in class." A second example was "leaving the room during class. A third was "assisting others with their assignments." Another was "sitting wherever you want."

XVII. CUSTOMER SATISFACTION:

One class determined their customer to be the business community. They went out and interviewed people in the business community. They asked these people to come back into the class as guest speakers. Many of these business people came into the class as guest

speakers and those who could not, were video-taped. These tapes were then shown in the class. In some cases it was not just a specific customer, it might be a group of customers or their representative. They were interviewed to determine how they personally or professionally benefited from the skills and knowledge learned in the class. This particular class happened to be home economics. This provided the students with a very important concept of customer satisfaction, and a vision of the purpose of the class.

XIX. TEAM TESTS:

Team tests were given by several of the different pilot teachers. One of the classes determined that they wanted the test to be a team test, without the teachers coming up with the idea. Another teacher used some team tests, but everything was not 100% team tests. Team tests should not be used exclusively. It is still necessary to assess an individual's abilities.

XX. CUSTOMER SURVEY:

One of the marketing education pilot projects decided they would work with the Chamber of Commerce to perform a survey within the community. Working with the Chamber of Commerce, they decided to come up with a customer survey for students. The idea behind this survey was to determine how much money students normally spend and their buying habits. The Chamber of Commerce wanted to know if the students spent money in the local town or did they go to one of the adjoining cities. The students designed this survey and administered it to the other students within the high school. They then took the results of this survey, summarized them and gave the information back to the chamber of commerce.

This type of activity has two purposes. One, it provides experience in the use of customer surveys. Secondly, it gives the students an opportunity to visit a real customer, in this case the Chamber of Commerce, and to provide for their needs.

XXI. MINIMUM STANDARDS:

One pilot class, which was an alternative school environment, decided they wanted to raise the minimum expectations for passing their course from 70% to 80%. They also set some targets for completing their work in a shorter period of time. The class actually beat both the objectives they had set.

XXII. DEFINITION OF QUALITY:

Different pilot teachers took different approaches to defining quality. One teacher asked students, "What is a quality date?" Another asked, "What are a quality car or a quality TV show?" It was not uncommon for the students to be unable to list a particular car or show, but they would be able to give characteristics.

This can lead into the discussion of "what is a quality class?" and "what makes up a quality class?" This could lead to comments such as "fun", "learned something", "get to make some decisions," or "good grades." Part of this discussion also was describing the characteristics of a quality instructor and the characteristics of quality students. This scenario could continue for quite a while on different aspects of quality.

XXIII. THE "Q" BOX:

One of the pilot projects defined a quality assignment. Some of the criteria they used were that it would be on time, it would be legible and easy to read, it would be complete, and the fourth criteria would be that the student would have their name on the assignment. A block was put on the upper right hand part of the page where the student could put a "Q" after they had made sure that each of the four criteria were met. All papers were required to have a "Q" on them before they were turned in. If, when grading, it was noted that the criteria were not met, the paper was handed back to the student and counted late.

XXIV. "POWER PLAYS":

The following description comes from one of the teacher's reports describing how she was able to incorporate team game playing exercises to not only teach TQM, but also to provide academic experiences.

Innovative total quality management "power plays" (strategy games) were designed to promote student's problem-solving skills and quality improvement techniques with game-related strategies as applied to lesson applications. An example of a "power play' lesson application that illustrates how competitiveness can yield to cooperation and then to creativity follows:

> Students initially played "power play" games such as "I Spy American Pie," which was simply a puzzle to solve. Teams received packets with puzzle pieces inside (one stray puzzle piece included per group, however) along with team instructions to assemble the puzzle with a goal of "speed" and "accuracy." Upon discovering the stray puzzle piece, teams soon realized that while they were competitively aiming for "speed" and "accuracy," cooperation

among teams would be required in order for the stray puzzle pieces to be returned to the puzzles of origin for final assembly. To take the "power play" games a step further, an S.A.T. lesson application was a follow-up activity.

When practicing total quality management problem-solving techniques, including the stages of "forming," "storming," "norming," and "performing" with "speed" and "accuracy" set as task objectives, student teams initially competed with each other in completing an assigned task, such as solving S.A.T. analogies, with "break-neck" "speed," as set forth by the teacher, student teams fell short of obtaining the "accuracy" goal. With a total quality management focus on continuous improvement, student teams were encouraged to modify their strategy for victory (whereby some students remembered the puzzle "power play" game and suggested "cooperation" with another team to master S.A.T. analogy solutions more accurately and quickly); upon a successive attempt, consequently, students were successful in mastering S.A.T. analogy solutions even more quickly than the earlier attempt with the accuracy level increasing slightly, as well, due to the added practice.

XXV. CURRICULUM DEVELOPMENT:

One pilot teacher gave the class an opportunity to develop the lesson plans for the six weeks period. She provided the class with an overview of the first section along with the essential elements that needed to be covered in the six weeks. The class was then empowered to develop exactly how to accomplish this task. The students brainstormed what would be in the different sessions, what techniques would be used, and exactly how they would make selections of the materials to be read. The students also set quality standards for each portion of the course.

XXVI. 100 PERCENT QUALITY:

The class spent portions of several class periods discussing what constituted quality. the phrase "100 percent quality" became a guide for performance. When someone, either the teacher or a student, did something that was obviously not done correctly, the class would quickly point out, "that wasn't TQM" or "that's not 100% quality."

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